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UNITED STATES NAVAL INSTITUTE PROCEEDINGS

Vol. 54 JUNE, 1928 No. 304

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UNITED STATES NAVAL INSTITUTE PROCEEDINGS

For the advancement of professional, literary and scientific knowledge in the Navy.

June, 1928

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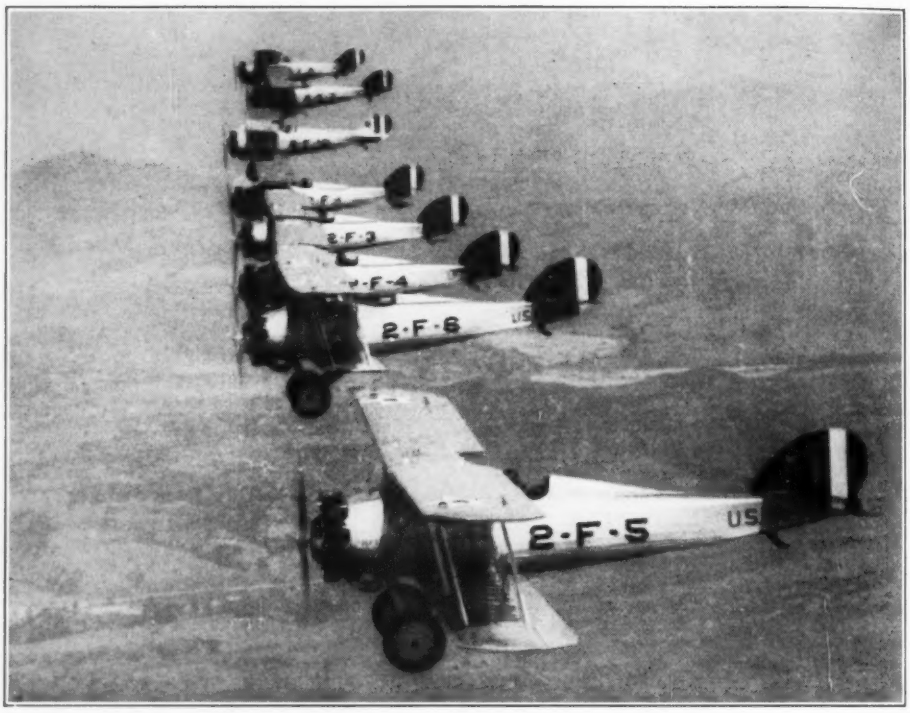

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A PRIZE NOT TO EXCEED FIVE HUNDRED DOLLARS WITH A GOLD MEDAL, and a life membership in the Institute (unless the author is already a life member, in which case he will receive the commuted value thereof), is offered by the Naval Institute for the best essay submitted on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. The award of the prize to be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay to the Secretary-Treasurer in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on the outside and the writer's name and motto inside. This envelope will not be opened until after the decision of the board. Essays must be received on or before January 1, 1929.

3. In addition to the "Naval Institute Prize," one or more essays may receive "Honorable Mention," if of sufficient merit to justify that award; or, in the event that no essay is adjudged of sufficient merit to receive the "Prize," the best essay submitted may receive "Honorable Mention" in lieu thereof.

4. In case one or more essays receive "Honorable Mention" the writers thereof will each receive a prize, the amount of such awards to be decided by the Board of Control in each case.

5. Announcement of awards will be made as soon as practicable after January 1, 1929.

6. Essays awarded the "Naval Institute Prize" or "Honorable Mention" will be published in the NAVAL INSTITUTE PROCEEDINGS as soon as practicable. Essays not awarded a prize may be published at the discretion of the Board of Control, and the writers of such articles shall be compensated at the established rate for articles not submitted in competition.

7. Articles shall be limited to eleven (11) printed pages in the PROCEEDINGS (approximately 8,000 words), but shorter articles will receive equal consideration.

8. In the event of the prize being awarded to the winner of a previous year, a gold clasp suitably engraved will be given in lieu of the medal.

9. All essays must be typewritten, double spaced, and submitted in duplicate.

R. C. MACFALL
Captain, U.S.N., Secretary-Treasurer

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APPROACH TO THE NAVAL ACADEMY, ANNAPOLIS

This air view shows the Maryland Avenue approach to the Naval Academy. The Naval Academy Chapel can be seen in the middle background.

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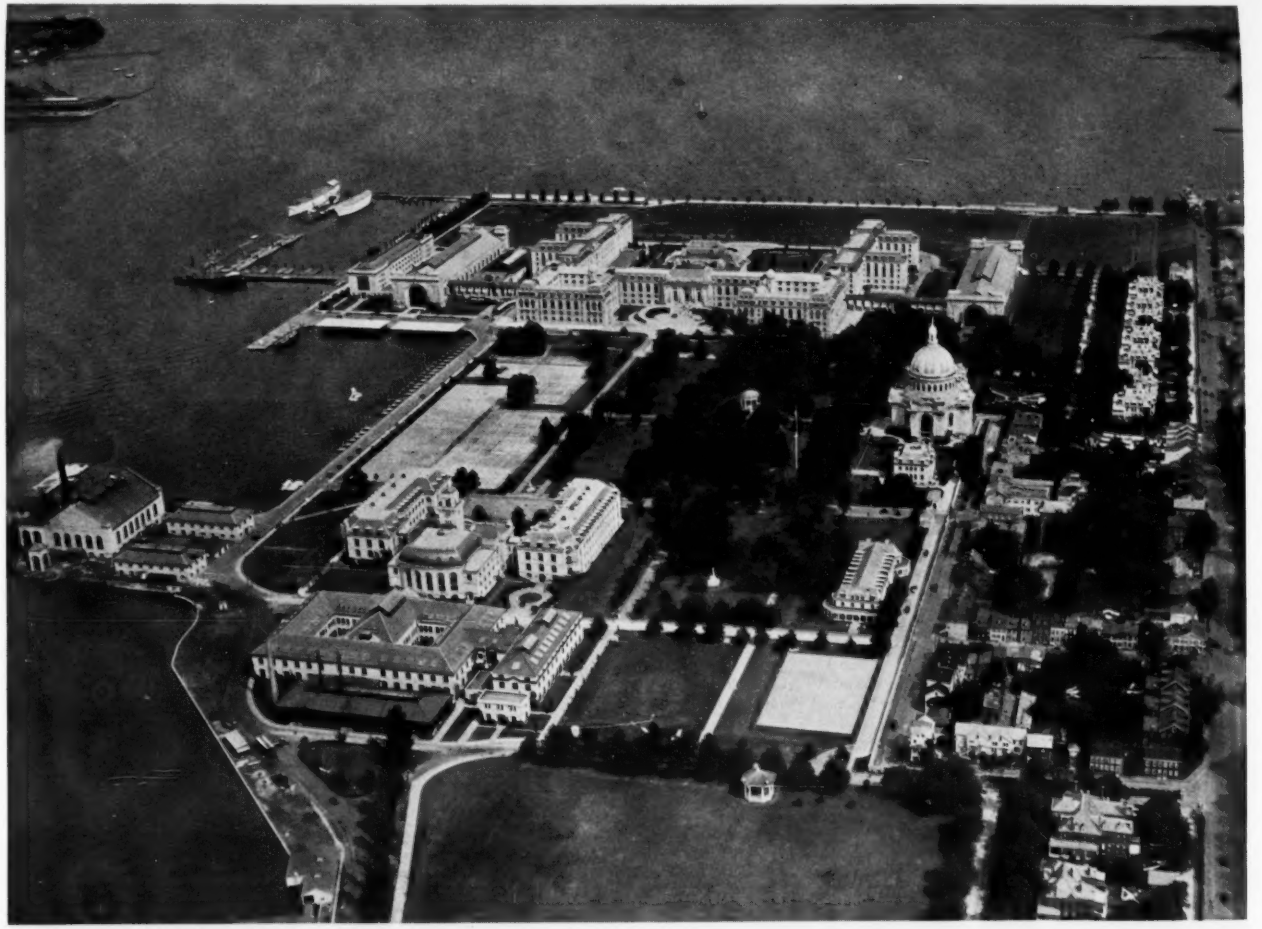

Courtesy of J. A Pringle, Photographer 3C, U. S. Navy

THE UNITED STATES NAVAL ACADEMY, ANNAPOLIS, MARYLAND

Air view of the beautiful grounds of the Naval Academy which are visited by thousands of persons each year.

White Studio, New York

THE SUPERINTENDENT

Rear Admiral Louis McC. Nulton, U.S. Navy, who is just completing a tour of duty as superintendent of the Naval Academy. He goes to sea in the near future as commander, battleship divisions, U.S. Battle Fleet, with the rank of vice admiral.

Navy Recruiting Bureau, New York

THE "COLOR GUARD"

The mission of the U.S. Naval Academy is to mold the material received into educated gentlemen, thoroughly indoctrinated with honor, uprightness and truth, with practical rather than academic minds, with thorough loyalty to country, with a groundwork of educational fundamentals upon which experience afloat may build the finished naval officer, capable of upholding, whenever and wherever may be necessary, the honor of the United States; and withal giving due consideration that healthy minds in healthy bodies are necessities for the fulfillment of the individual missions of the graduates; and that fullest efficiency under this mission can only be attained if, through just and humane yet firm discipline, the graduates carry into the service respect and admiration for this academy.

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THE BOARD OF VISITORS INSPECTS THE REGIMENT

Each year the president, vice president, and the speaker of the House of Representatives appoint a board of visitors made up of senators, representatives, and distinguished citizens to report on the welfare of the U.S. Naval Academy. First row, left to right: Rear Admiral L. M. Nulton, U.S.N., superintendent, Representative Florence P. Kahn, California, Rear Admiral H.P. Jones, U.S.N. (Ret.), Mr. W.M. McFarland, Mr. C.D. Cass, Senator Frederick Steiwer, Oregon, Representative G. R. Stobbs, Massachusetts, Mr. C. G. Brainard, Mr. C. H. Dennis, Representative H. W. Sumners, Texas.

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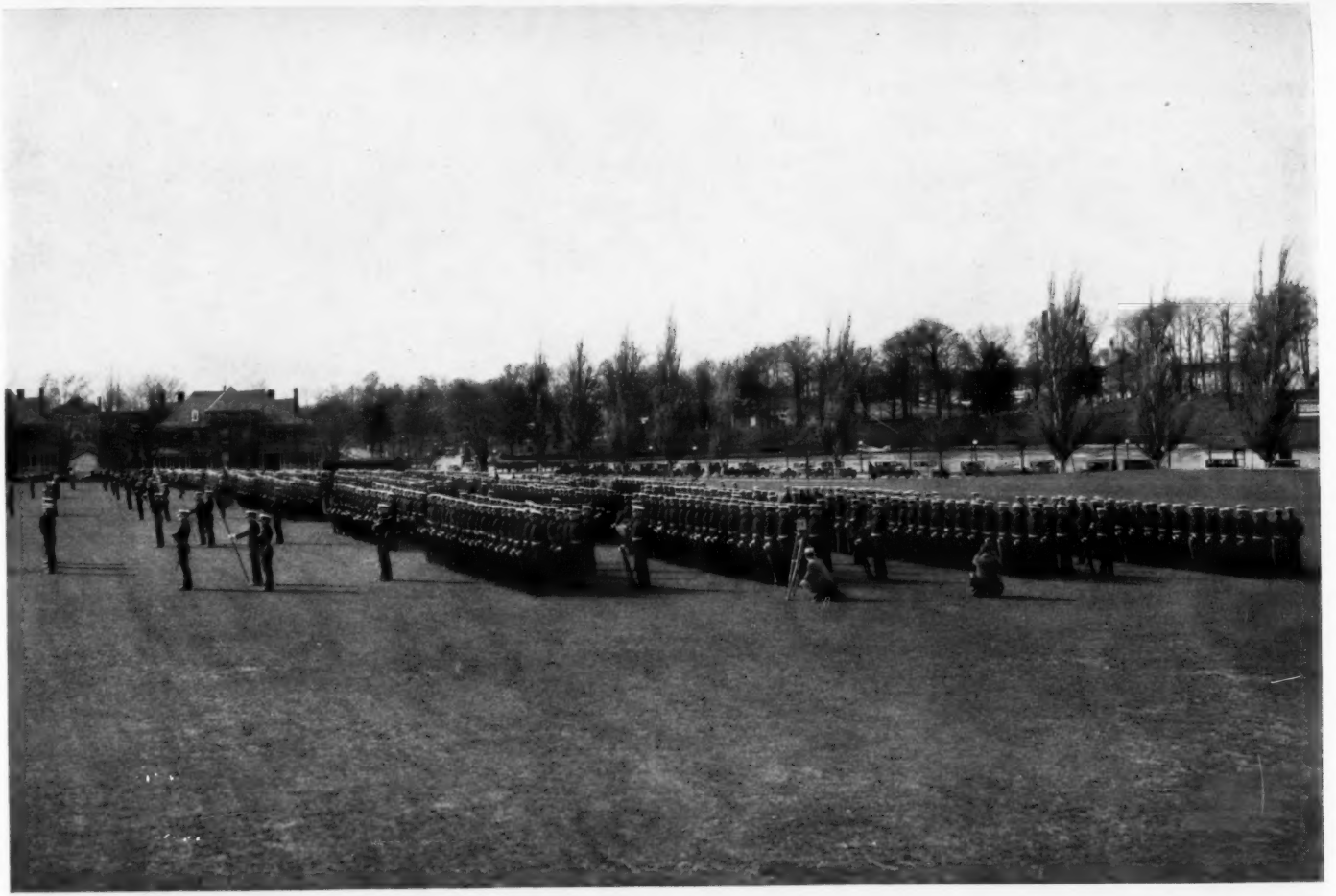

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THE REGIMENT OF MIDSHIPMEN, ANNAPOLIS, MARYLAND

Courtesy of Captain C. W. Nimitz, U.S. Navy

THE INSPECTION PARTY

Admiral L. R. de Steiguer, U.S. Navy (left), commander-in-chief, Battle Fleet, with his chief of staff, Rear Admiral Harris Laning, U.S. Navy, and Captain W. D. Puleston, U.S. Navy, assistant chief of staff, inspect the Naval R.O.T.C. unit of the University of California, which is under the charge of Captain C. W. Nimitz, U.S. Navy (right). The president of the University of California, W. W. Campbell (next to Admiral de Steiguer) and Colonel R. O. Van Horn, U.S.A., (in charge of the Army R.O.T.C. unit) are the other two members of the inspection party.

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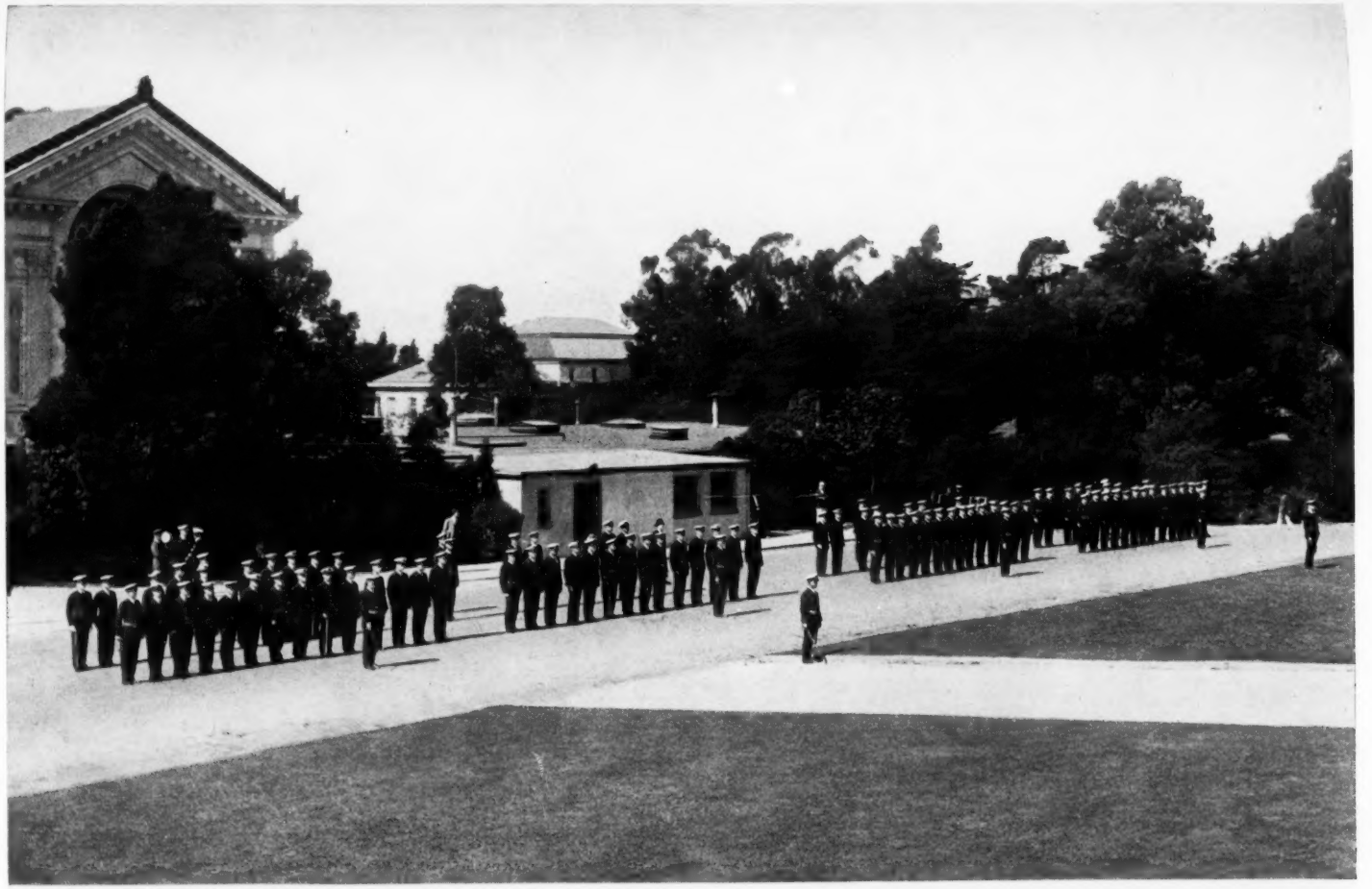
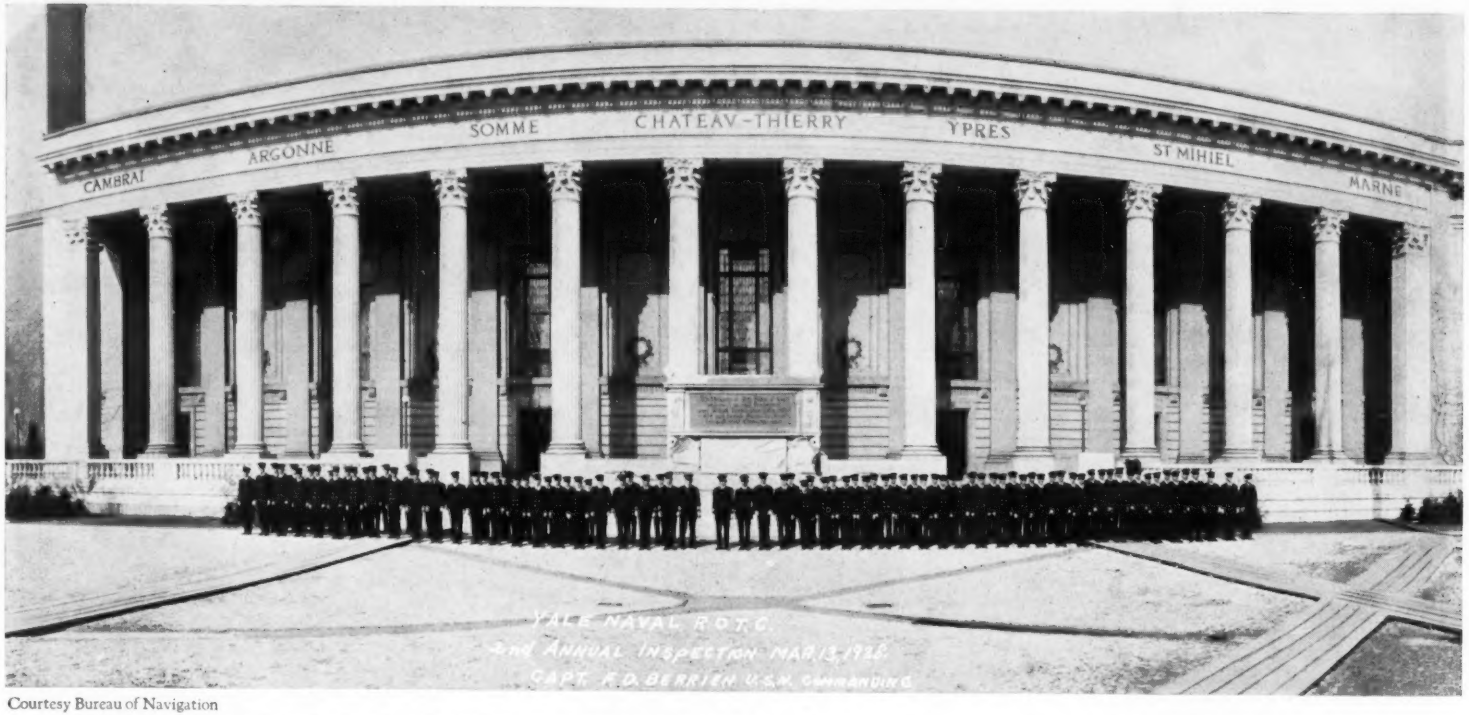


Courtesy of Captain C. W. Nimitz, U.S. Navy

NAVAL R.O.T.C. UNIT AT THE UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA



Courtesy Bureau of Navigation

YALE NAVAL RESERVE OFFICERS' TRAINING CORPS PARADED BEFORE YALE MEMORIAL AT SECOND ANNUAL INSPECTION MARCH 13, 1928

Tablet reads as follows:
"In Memory of THE MEN of YALE
who true to Her Traditions
gave THEIR LIVES that FREEDOM
might not perish from the Earth
1914—ANNO DOMINI—1918."

Naval R.O.T.C. units are maintained at the following universities: Yale, Harvard, Georgia School of Technology, Northwestern, Washington and California.

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Courtesy of the owner, Sir Robert A. Hadfield, Bart., F.R.S.

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UNITED STATES NAVAL INSTITUTE PROCEEDINGS

Vol. No. 54, No. 6 JUNE, 1928 *Whole No. 304*

The Naval Reserve Officers' Training Corps

By CAPTAIN C. W. NIMITZ, *U. S. Navy*

ON MARCH 4, 1925, with the approval of House Resolution 2688, the President set another strong prop under the structure of our national defense. Section 22 of that act authorizes the establishment of a Naval Reserve Officers' Training Corps, the total personnel of which shall not number at any one time more than 1,200. The act confers upon the secretary of the navy powers of control over the Naval R.O.T.C. similar to those exercised by the secretary of war over the Army Reserve Officers' Training Corps which was authorized by the National Defense Act of June 3, 1916, as amended June 4, 1920.

In the Act of March 4, 1925, the term "naval" includes both the Navy and Marine Corps. It was planned by the Navy Department to allot to the Marine Corps one-fifth of the total allowed number of students or 240, and to the Navy four-fifths or 960 students. The Marine Corps has considered, but as yet has not decided to establish separate Marine Corps units, so that for the present, all training has in view the production of efficient naval reserve officers.

Members of the Naval R.O.T.C. are officially known as Naval Reserve Students, and the various undergraduate classes are termed Naval Reserve Freshmen, Naval Reserve Sophomores, Naval Reserve Juniors, and Naval Reserve Seniors.

In the words of the Navy Department:

> The primary object of the Naval Reserve Officers' Training Corps is to provide systematic instruction and training at civil educational institutions, which will qualify selected students of such institutions for appointment as officers in the Naval Reserve. The Naval Reserve Officers' Training Corps will be expected to supply efficient junior officers to the Naval Reserve and thus assist in meeting the demands for increased commissioned personnel in war time.
>
> The secondary object of the Naval R.O.T.C. is to further acquaint the college authorities and the student bodies with the Navy and what it means to the Nation. The present influence on American public opinion of colleges and universities and the future influence of present day students make this secondary object of considerable importance to the Navy.

Funds for the establishment of naval training units were not made available until the commencement of the fiscal year 1927 (July 1, 1926), for which period Congress appropriated $40,000. With this modest sum the Secretary of the Navy, in the fall of 1926, inaugurated naval units in the following educational institutions: University of California, University of Washington, Harvard, Yale, Georgia School of Technology, and Northwestern University. The administration of these units is conducted by the training division of the Bureau of Navigation under the direction of the chief of bureau. The total allowed personnel under training is equally distributed between the six institutions, and the two hundred naval reserve students at

[Editor's Note: For description of Turner's "Mount Vesuvius in Eruption in 1818," see page 484.]

Courtesy of the owner, Sir Robert A. Hadfield, Bart., F.R.S.

each university are to be further divided between the four undergraduate classes.

Two naval officers and several enlisted men were detailed to each institution in sufficient time to start enrollments upon the opening of the regular fall sessions of 1926. Sixty freshmen from the class of 1930 at each of the selected institutions began their naval experiences simultaneously with their college careers. Naval units will not reach their full authorized strength until the fall of 1929 when that year's allotment of freshmen is enrolled, nor will the system produce naval reserve ensigns before the graduation of the class of 1930 in the spring of that year.

At each of the institutions selected, a four-year course in naval science and tactics, including both theoretical instruction and practical work, has been added to the list of courses offered. During the first two years, students complete a basic course; during the last two years, an advanced course. A cruise of fifteen days at sea in a naval vessel is offered each summer to each naval reserve student, and it is during this time that theoretical instruction gives way to such practical work as boating, marlinspike seamanship, signals, engineering procedure, and navigation. One such cruise is compulsory during the advanced course. All other cruises are voluntary on the part of the students, it being recognized that those students who pay their own way through college must have some of their vacation periods available for remunerative work.

The object of the course in naval science is to supplement the other courses taken at the university so that graduates of both will possess:

(a) A good education.

(b) Sufficient knowledge of such naval subjects as seamanship, navigation, ordnance, military and international law, naval engineering, naval strategy and tactics, and naval communications, to fit them to perform their duties as junior officers of the naval reserve.

(c) A disciplined mind and body.

(d) The quality of self-reliant leadership.

The basic course requires three hours per week and the advanced course five hours per week. The subjects taught in the basic course are navigation, ordnance, and seamanship, to which engineering is added to form the advanced course. Seamanship includes naval regulations, leadership, tactics, and strategy, military and international law; engineering includes mechanical engineering, electrical engineering, and radio. The course in navigation is a complete course in piloting, dead reckoning, nautical astronomy, and compass adjustment, and in addition to fitting the student to perform the duties of a junior officer in the naval reserve will afford the necessary knowledge to pass examinations for papers in the merchant marine. Naval officers of considerable service experience are assigned as instructors. Those institutions having astronomy departments can and do lend valuable aid in the teaching of navigation.

At the University of California, basic course students devote four hours per week to naval work as follows:

Classroom seamanship.....one hour
Classroom ordnance and gunnery.one hour
Classroom navigation.....one hour
Practical exercises.....one hour

Advanced course students will devote an additional hour per week to naval engineering. Practical exercises include infantry drill, boat drill, and gun drill at a four-inch fifty caliber naval gun mounted on the campus. The above hours are supplemented by occasional visits to ships in port and to the Navy Yard, Mare Island.

Students are selected from those who apply with regard to their:

(a) Physical condition.

(b) Latent qualities of leadership.

(c) Probability of attending the university continuously for four years.

(d) Other courses taken at the university.

They must be citizens of the United States, not less than fourteen years of age, and must pass a rigid physical examination prior to acceptance. The physical examination is given by naval medical officers. Only those applicants who are both physically and mentally alert and whose characteristics show that they can be developed into real leaders of men are accepted for enrollment.

The Naval R.O.T.C. forms a natural outlet for those members of Sea Scout organizations who are passing from the high schools into the colleges and universities. These young men usually graduate from a Boy Scout troop into a Sea Scout organization when they are fifteen, and by the time they enter college they have usually spent

one or two years learning the rudiments of sea scouting. Because of the limited time available for instruction during the basic course (three hours per week), ex-Sea Scouts who are otherwise mentally and physically qualified, form excellent material for enrollment into the Naval R.O.T.C. Much time will be saved in their preliminary seamanship instruction and they will not be so befuddled on first encountering the nautical phraseology in which our textbooks are written.

Membership in the naval unit does not require any considerable outlay of money on the part of the student. In fact the expense incidental thereto is negligible and is more than offset by the many advantages. Uniforms and textbooks are furnished by the government. The uniforms are similar to those worn by the midshipmen at the U. S. Naval Academy except for the distinctive corps device worn on the sleeve. Advanced course students will be paid a small amount each month, as subsistence allowance while taking the course. This amounts to about $210 for the advanced course, and is the equivalent of a scholarship of that amount given by the Navy Department to each student taking the advanced course. In addition advanced course students will be paid about seventy cents per day while on their summer cruises. Both basic and advanced course students are given subsistence while cruising and are allowed transportation between the university and the port of embarking and debarking from the summer cruises. The university requires a small deposit from each student as a guarantee for the proper care of uniforms and books. This deposit is returned to the student on graduation, or on return of uniform and books in good condition, if withdrawing from the course prior to graduation.

Students who have completed the course will be given a certificate showing such completion. Those who successfully complete the course and graduate from the university will, if recommended by the professor of naval science and tactics, be given a commission as an ensign in the Volunteer Naval Reserve, provided they apply for it. Graduates holding a commission in the Volunteer Naval Reserve and who actively associate themselves with a reserve division and attend drills will become eligible for transfer to the Fleet Reserve. While in the Fleet Reserve and attending regular drills, officers receive yearly a sum equal to two months active pay in their rank (ensigns about $250). Graduates, however, do not have to remain in the Naval Reserve, and on completion of the course, are not required to accept a commission, but it is believed they will readily see the advantage of so doing.

Those naval units located close to large seaports have a considerable advantage over those less fortunately situated. Visits to ships in port and to adjacent navy yards are frequently arranged during regular sessions to maintain the student's interest and to satisfy the natural desire to see real things pertaining to the sea in addition to studying about them out of books. Occasional opportunities are presented to make short cruises or underway visits to ships of the fleet. On the West Coast the U.S.S. *Tennessee*, one of the largest and latest of battleships, was designated to make the cruise during the summer of 1927 for the naval units of the University of California and the University of Washington. During the summer of 1928 the U.S.S. *Pennsylvania* will take about fifty members of University of California naval unit to Victoria, B.C., in time to participate in the celebration of Empire Day and Victoria Day.

Naval Reserve students are admitted to the advanced course only on their written application and agreement to continue training in the advanced course until the completion thereof, unless sooner discharged. They further agree in writing to attend one advanced cruise. In return for the additional work required during the advanced course, the government pays the student a total of approximately $225 in cash and furnishes him with subsistence while on cruise.

Is this contract mutually advantageous to the student and to the government? From the student's standpoint it certainly should appear so. First of all, in the so-called "Land grant institutions" military or naval training is compulsory for the first two years, during which time he must complete a basic course. While he receives no pay from the government during this preliminary period, he will, if in the Naval R.O.T.C. unit, receive a well-fitting tailored uniform made of excellent material which he can wear to social functions as well as to drills and recitations. He also has the

opportunity of making visits of inspection to various types of naval vessels, and during his summer vacation he can make a two weeks' cruise on a man-of-war during which his expenses will be practically nil. How many boys dream of cruising on a man-of-war and how few are accorded the privilege!

During his second two years in college the monthly commuted ration check from Uncle Sam will help to meet many small bills in case he is hard pressed financially, or to furnish small luxuries if he has just enough money to get him through college with nothing left over for frills. And the work required to earn this check is interesting even though it requires five hours per week. By that time the student will have learned how to get the most study out of the available time—something which he usually does not know on entering college—and will be in a position to devote five hours to Uncle Sam's course in addition to the time required for his regular work.

And on graduation, in addition to receiving his diploma and a degree, he may, if he so elects, receive a commission as an ensign in the U. S. Naval Reserve. If he continue, as he should and probably will, to maintain an active interest in naval affairs, and if he join a fleet reserve division soon after graduation, he will keep in line of promotion and will have the satisfaction of knowing that he is carrying his share of the burden and duty of national defense. Furthermore, while actually serving in the Fleet Naval Reserve and attending regular drills, he will be receiving each year from the government two months' pay which represents a sum not to be lightly regarded in starting life's rocky road.

What a satisfaction it will be for him to know, that in the emergency of war, he can jump immediately into a station previously assigned, a station for which he has trained and in which he can render useful service. Contrast his frame of mind with that of the graduate who, though patriotic enough, took only the minimum required military or naval training while at college, and who, since graduation has been interested only in his business. The emergency of war will probably find him bewildered as to what he can or should do, and if he does not do something voluntary at once, he will soon have his mind made up for him by some form of conscription. This may be the easiest way for him, but is he giving the government the best that should be expected of a college graduate?

Now let us examine the contract from the government's standpoint. It is estimated that the total cost of the equipment to be furnished to the six selected institutions will be $60,000. As this sum is to be expended over a period of four years, the average cost per year for *material* will be $15,000, but this will be for the first four years only. After that the yearly expenditure for material will be much reduced, as it need cover only the normal wear and tear, with occasional additional sums for new items of equipment.

The cost of training per student at the University of California can be roughly estimated as follows:

(a)	First uniform outfit (basic course)	$ 55
(b)	Second uniform outfit (advanced course	50
(c)	Three summer cruises (transportation, subsistence, and pay)	70
(d)	Advanced course—commutation of rations	315
(e)	Miscellaneous transportation	10
	Total	$500

Suppose at the end of ten years the system were suddenly shut down. What will be the cost to the government per graduate? By that time seven classes will have graduated. Assuming a maximum total of 240 graduates per year from all six institutions we can expect 1,680 to have been commissioned. Costs will be approximately as follows:

(a)	Original equipment—spread over first four years	$ 60,000
(b)	Wear and tear and replacement of lost or damaged equipment, five per cent per year, commencing at end of first year	27,000
(c)	1,680 graduates at $500 per graduate	840,000
(d)	360 freshmen on each of whom $55 has been spent	19,800
(e)	300 sophomores on each of whom $75 has been spent	22,500
(f)	240 juniors on each of whom $275 has been spent	66,000
(g)	Pay of enlisted men attached to naval unit (in excess of retired pay)	242,000
	Total for 1,680 graduates	$1,277,300
	Cost per graduate	$ 760

If, however, the system continues, and it is reasonable to expect that it will continue, items (d), (e) and (f) can be omitted,

making the total cost per graduate approximately $700. These estimates do not include the cost of maintenance of cruising ships, nor the salaries of naval officers acting as instructors or administrators of the Naval R.O.T.C., which items are a part of the fixed charges which the government normally bears, irrespective of the existence of the Naval R.O.T.C. Nor has the interest on the investment been included. The cost does include the excess of active pay over retired pay of three retired chief petty officers who are on duty with each naval unit.

While the approximate cost per graduate can be roughly determined, it is a great deal more difficult to determine each graduate's value to the government. There are too many intangible factors to be evaluated. In addition to the graduate's increased value as a trained reserve officer prepared to step into an important position in the naval scheme for naval defense in time of war, is his increased value as a citizen. We can expect him to be a strong supporter of internal law and order, and of any movement to keep the armed forces of the country in a "reasonably defensive posture"; and, in so far as the Navy is concerned, we may be sure that in his daily mingling with his business associates, he will preach the gospel of a Navy second to none.

And in the growth and upbuilding of a merchant marine we will find in each graduate a firm advocate. There will be some who, by reason of their liking of the sea and their acquisition of the requisite technical knowledge, will find their careers in the merchant marine. And where will we find better personnel to carry our goods around the world than our naval trained college graduates who elect to follow that line of endeavor? The growth of our merchant marine need not be delayed by reason of lack of trained officer personnel.

The graduates of the Naval Reserve Officers' Training Corps units will be young men of great energy, strong determination, and high character, because it will take just those qualities to make the college student accept the extra work load and see it through. Naval Academy graduates do not soon forget the steady grind of four years at Annapolis. During each academic year of eight months a midshipman devotes about seventeen hours each week to classroom recitations. During a similar period of each year, naval reserve students must spend approximately the same number of hours on recitations and lectures, and in addition, the three or five hours per week on naval subjects.

At the University of California about seventy-five per cent of the students work their way through, either wholly or in part, and the naval unit has its proportion of this type of student. Remunerative employment ranges all the way from three to eight hours per day during the regular session, to steady employment during vacations. A bureau of occupations at the university assists students to find the type of work they are capable of doing. Students are employed as clerks, ushers, actors, janitors, watchmen, bakers, cooks, waiters, tutors, drivers, gardeners, conductors, brakemen, gatemen, oil station employees, laundry workers, stevedores, salesmen, and in many other capacities. One student owns his own concrete mixer with which he does odd jobs to see him through. Truly he is making his way via a hard route.

Roughly speaking, the time spent by a midshipman in practical work must be spent by the average student in remunerative employment, with this difference—the midshipman usually need not worry about the allocation of his time. That is done for him. Not so with the naval reserve student who must work. He must frequently hunt for his employment. Those students who go out for athletics, that is, the varsity teams, carry an additional load.

Has the government made a wise investment in the establishment of the Naval R.O.T.C.? We think that in the passage of time this question will be answered in the affirmative.

Handling Vessels *in* Restricted Waters

By LIEUTENANT F. E. NELSON, *U. S. Navy*

THE subject of navigation of rivers, canals, and other restricted waters has scarcely been touched upon from a scientific standpoint. Experiments along this line seem to be very meager, due, perhaps, to the fact that conditions are so hard to simulate on a diminutive scale, and very little knowledge appears to be available from this source. Observations of ship models towed in tanks or basins furnish some valuable data for this purpose, but experiments along this line cannot be considered conclusive until conducted with self-propelled models or craft built to the proportions of the channels in which the experiments are made, and operated normally and freely with their own power in such channels. Such experiments as have been made and carefully recorded seem to have been made in tanks with models that were towed, and when two models were used both were towed in the same direction on parallel courses. One model was towed faster than the other and considered as the overtaking vessel in some of the experiments. The tendency of the models to yaw as they came near enough to each other to be influenced by interaction was carefully measured and furnishes very valuable data. However, these experiments cannot be considered as final for the models used were rigidly held on their courses and not allowed to act normally. It must also be borne in mind that the wake currents and probably all of the currents around the hull of a self-propelled vessel are different from those around the hull of a vessel that is being towed. It should further be borne in mind that vessels not restricted in their courses as the towed models were, would leave their courses and that the subsequent interactions might show facts not anticipated. Nothing seems to have been attempted in the line of securing data on vessels meeting each other, nor does much seem to have been done in obtaining data on the effects or interaction that banks or walls exert on vessels traveling near them.

It is hoped that means may sometime be available to conduct conclusive experiments along this line. This will be a tedious and perhaps very expensive undertaking. It will require numerous models. These models must not only vary in size but must include different designs, as to length, beam and draft and fineness, and must include such differences as single and multiple screws, inboard and outboard turning screws, large and small screws, location of screws, high and low powers, and finally questions concerning sizes, types and locations of rudders, contra-propellers and other underwater projections such as keels and rolling chocks, deadwood and shoes, and with these differences in the models, changes in trim must be made during the experiments.

A great deal of valuable information is obtainable from the records of the Panama Canal, especially from the records of the board of local inspectors of the Panama Canal. This canal handles a tremendous volume of traffic and every vessel transiting must pass 2.70 nautical miles between lock walls which are vertical and only 110 feet apart; through 7.77 nautical miles of channel nominally 300 feet wide at the bottom and having rocky, nearly vertical walls for most of its length; 16.54 nautical miles of channels mostly dredged and salty with a nominal width of 500 feet at the bottom; 3.69 nautical miles of channels nominally 800 feet wide at the bottom; and 13.38 nautical miles of channels nominally 1,000 feet wide at the bottom. The 800-foot and 1,000-foot channels are mostly natural channels through Gatun Lake. The nominal width of the bottom of channels may be considered as the minimum in all cases. The salt water channels may roughly be considered to be forty feet deep, while the fresh water channels are usually forty-three or more feet deep. The depth of water on the

Pacific side is greatly affected by rise and fall of tide. The depth of water in the remainder of the canal varies but slightly.

Every vessel must approach three solid piers (center approach walls) and leave two during northbound transit. They approach two and leave three during southbound transit. (The north approach wall at Gatun is arched and does not exert bank or wall influences like solid walls.) Vessels continually meet and pass other vessels in the 300-foot Cut and in all of the wider channels.

Very few accidents occur in the canal considering the volume of traffic, but when such accidents do occur they are immediately investigated by the board of local inspectors which brings out all of the facts of the case in detail. The members of this board are all naval officers assigned for that purpose from the United States Navy. The records of this board are very complete and furnish very reliable data on the causes of these accidents. These records have been consulted in the preparation of this discussion.

It may almost be considered that the Panama Canal is a perfect experimental laboratory as all of the conditions laid down as being necessary for such a laboratory are found here. Vessels of all sizes, models, length, beam, draft, propelling equipment, steering equipment and other characteristics, pass through almost daily. As the 300-foot Cut (narrowest part of the Canal) is near the center of the channel length, many of the ships have to meet in it and pass each other close aboard, and with steep banks on either side. Close intelligent observation is all that is necessary to establish certain facts concerning the handling of vessels in such restricted waters.

Besides the observations made by the pilots, observations are made by the hydrographers, of the level of the water in the canal, and of all fluctuations of this level. These observations show surges in the Cut sometimes approximating four feet. This has been attributed to the regular drawing of water by the Pacific locks as these locks receive their water through the Cut from Gatun Lake, to the disturbances generated by vessels in transit, and to winds; but it is not definitely known to what extent each of these elements contribute to this phenomenon. It has been assumed that the drawing of water by the locks is the greatest contributing element as the surges are more or less rhythmic, but the transit of vessels is equally as rhythmic as the drawing of water by the locks; in fact these two operations are more or less coincident. The drawing of water by the locks is very uniform in quantity, and should give a uniform surge; but the surges vary so greatly that it appears logical to assume that the greatest element of their cause is the number, size and speed of transiting vessels. This is supported by experimental tank data, and by the local harbor regulations that exist in nearly all narrow harbors in regard to speed, as any high speed, especially by a large, deep draft vessel is sure to make such disturbances of the water that vessels moored to piers or anchored are liable to be torn loose, thrown against piers or banks, or upon the banks. If the banks are low, water may even be thrown over the banks and cause flood damage. A vessel and its wake may be thought of as a surge traveling through the water. This is not so apparent in a spacious seaway as it is in a channel. In narrow channels this surge becomes very apparent to the eyes of the observer, especially in the case of a vessel using considerable power, and a keen observer will readily notice the marked difference between the surges in case of a self propelled vessel and that of a vessel being towed at same speed or being driven by sail.

If the Cut averages forty-three feet deep and 310 feet wide or 13,330 square feet in cross section, a vessel with a beam of ninety-five feet and a draft of thirty-five feet or approximately 3,325 square feet cross section will displace nearly one-fourth of the water in the Cut while traveling. If this displacement was all by height instead of by current past the vessel, and assuming that the surface of the Cut is 310 feet wide, the surface of the water would be raised approximately fifteen feet at the midship section. This of course does not occur, as most of the water passes the vessel as current. The speed of this current to maintain an absolute level of the water would be as the speed of the vessel times ninety-five over 215 or 2.65 knots (nearly) for a speed of six knots, provided that there is no current below the depth of the draft of the vessel. Just how the displacement of the vessel takes place cannot be exactly stated, but as a current of two or three knots is induced in water with a very small

difference of elevation, it will be assumed that the speed of the current is approximately that computed. A vessel of this size must therefore be passing through the water at a speed of considerably over eight knots to maintain a speed of six knots over the ground in the Cut. This is the case of a battleship.

If a tanker with a beam of sixty-five feet transits the Cut drawing thirty feet, it is displacing water whose square section is approximately 1,950 square feet. Assuming that there is very little current below the depth of the vessel, the current which flows in a contra direction to the movement of the vessel, if the average width of the Cut is taken as 310 feet, would be as sixty-five divided by 245 or 26.5 per cent (nearly) of the speed of the vessel. Thus an average tanker is passing through the water at a speed of about 7.6 knots per hour to make a speed of six knots per hour over the ground.

In actual practice some of the displacement is by height but most of it is by current, this current having varying speeds like the current in a river, slow near the edges, and faster in the center of the stream or streams, which in this case is one on each side of the vessel, with greatest speed nearer the vessel than the banks.

We have already stated that water does not move as rapidly near banks as it does in the middle of the stream. This is equally true of water near the bottom of a channel or bed. This partly accounts for the reason why large, deep vessels are so hard to manage in restricted waters. With small, shallow vessels there is ample room for flow underneath the hull as well as to each side, while in large, deep vessels the flow is practically restricted to the sides. This also partly accounts for large, deep vessels sheering so persistently from banks or walls and being so hard to break from a sheer, as water must pass from one side of a vessel to the other very readily if the sheering tendency is to be overcome. Water must also pass from one side of the vessel to the other when a vessel is changing course as is necessary in breaking a sheer.

We have shown that a large battleship must pass through the water over forty per cent faster than the speed of the vessel over the ground, and that an average tanker must pass through the water over twenty-five per cent faster than the speed of the vessel over the ground, when transiting the Cut. We know that the power required to drive a vessel in shallow water greatly exceeds the power required to drive it at equal speed in deep water. It is logical to assume that still more power is required to drive this vessel at the specified speed in waters that are restricted both as to depth and width. This would indicate that a heavily laden vessel having a sea speed of not over ten or twelve knots is developing nearly its full power when traveling at a speed of six or seven knots in the Cut, and that it has not a sufficient reserve of power for emergencies.

It is also apparent that a towboat made fast on the vessel's bow cannot swing itself to an efficient position for assisting the vessel in turning or breaking a sheer, unless the vessel is running very slowly, as the towboat in such an emergency is unable to assume a position with sufficient angle to be of any real value and no towboat can of itself take such angular position against such current. If the towboat were brought to such angle by lines from the vessel, while the vessel maintains its speed, it is probable that the towboat would be swamped unless the lines carried away or were cut.

In the case of a self-propelled vessel, when the machinery is started, the vessel moves due to certain disturbances affecting the gravity and inertia of the water surrounding the vessel. These disturbances set up high and low pressure areas around the vessel, and the vessel moves from an aggregate of high pressures exerted on the propeller, rudder and hull towards an aggregate of low pressures exerted on these same parts. The forces of gravity and inertia are used or acted upon in building up these pressures. The area of highest pressure is usually on the driving side of the propeller, while the area of lowest pressure is usually on the opposite side of the propeller. There is likewise a high pressure side and a low pressure side on the rudder when it is being used to change the course of a vessel. The areas of the propeller, or propellers and rudder are small in comparison with the remainder of the underwater body of the vessel, and much lower pressures exerted on the larger areas of the hull are often able to take charge and determine the movement of the vessel.

When the water through which a vessel is moving is both broad and deep, the pres-

sures around the submerged parts are normal, and need not to be taken into consideration except in a very general way, and then it is quite exact enough to say, "The propeller pushes the vessel," or, "The rudder steers the vessel," but when the vessel is in restricted waters it becomes essential to know to what extent all of the different elements enter into the handling of the vessel. It is the purpose of this discussion, to show how, why, when and where high and low pressure areas occur around vessels moving in restricted waters, and how the steering and handling of vessels are affected by such pressure areas.

For convenience, the accompanying sketches are scaled for a channel width of 300 feet, the vessel to a length of 450 feet and a beam of sixty feet. These dimensions are used in the computations which follow along with the assumption that the vessel is drawing thirty feet with even trim, and that the walls of the channel are vertical. Dots represent areas of high pressures. Circles represent areas of low pressures. The number of dots indicates the intensities of high pressures, and the size of the circles indicates the intensities of low pressures. The term "yaw" will be used to denote an intentional or unintentional change of the vessel's heading that can be controlled easily while sheer will denote an unintentional change of the vessel's heading that cannot be controlled easily.

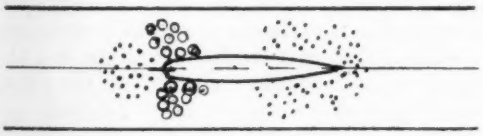


FIGURE 1

Figure 1 shows the stream lines, the areas, and the intensities of high and low pressures surrounding a vessel in mid channel, when moving ahead through the water by its own power which is being applied through a propeller or propellers near the stern. The high and low pressure areas and intensities are equal on both sides of the vessel, and produce no tendency for the vessel to yaw or sheer.

Figure 2 shows the stream lines, the areas, and intensities of high and low pressures surrounding a vessel that is parallel with the channel but sixty feet off of the centerline.

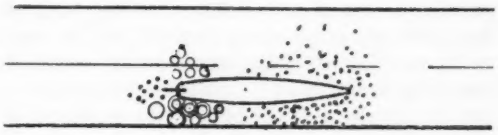


FIGURE 2

It is operating with its own machinery as in Figure 1. A vessel in this position will have a tendency to sheer towards the center of the channel. Being sixty feet off of the centerline of the channel, this vessel's bow is dividing the water of the channel into two parts, one of which is 210 feet wide and the other only ninety feet wide. Amidships there remains only sixty feet to the bank on one side of the vessel while there is a space of 180 feet to the bank on the other side of the vessel. It is evident that the ninety feet of water on the one side of the vessel's bow will be reduced to sixty feet or to two-thirds of its original width in passing the midship section while the water on the other side will only be reduced from 210 feet to 180 feet or to six-sevenths of its original width. In other words, the reduction on one side is one-third of the width of the channel room while on the other side it is only one-seventh. If the water cleft by the bow went to and remained on each side of the vessel as originally cleft by the bow, and moved only laterally and vertically and provided that the vessel did not change its level, trim or list, the vertical section displaced to the right would be approximately thirty feet by thirty feet square, or 900 square feet, and that displaced to the left would be the same; 900 square feet divided by the width of the narrower side or sixty feet equals fifteen feet or the height that the water would rise on that side of the vessel. Dividing 900 square feet by the width of the wider side, or 180 feet, equals five feet or the height that the water would rise on that side of the vessel.

This shows a difference of ten feet in the height of the water on one side of the vessel over that on the other side of the vessel, tending to set the vessel, especially the bow, towards the center of the channel. In actual practice these heights do not occur in full, due to water eddying under the keel and dissipating as longitudinal current past the vessel, and to slight changes that occur in the level, trim and list of the vessel. But enough of this condition does occur to

greatly affect the vessel's steering, and in the case of large deep vessels, it is very pronounced, and dangerous if the vessel is carrying much way. The excess pressure due to the extra height of water on the side of the bow close to the bank or wall will be termed bank, wall or bow cushion or pressure.

If in such cases, no water was transferred from one side of the vessel to the other, and if there was no dissipation due to longitudinal currents, the height of water on the after part of the vessel would be equal to that on the forward part of the vessel and the pressure would be equal (inertia neglected), and there would be no tendency for the vessel to sheer, but there would be a tendency for the vessel to be set over bodily towards the center of the channel at which point all such tendency would cease.

But in such cases, some of the water passes under the keel to the other side of the vessel, or is dissipated in longitudinal currents so that all of the water originally divided by the bow to the bank side does not remain on the bank side of the vessel. The result is that as the surface reopens at the stern of the vessel there will not be enough water to fill the area on the bank side completely, so that the surface of the water there will be slightly lower than the level of the water on the other side of the stern. This, of course, produces unequal pressures on the two sides, and this naturally has a tendency to set or carry the stern towards the bank as the lower pressure is on that side. This tendency we shall term bank, wall, or stern suction. The combined tendencies of bank cushion and bank suction will be termed bank interaction or influence. Bank cushion can be produced on the stern of a vessel when the vessel is moored to a solid wall or stopped near one, by backing the engine, next to the wall. Bank suction can be produced on the stern of a vessel moored to a solid wall or stopped near one by going ahead on the engine next to the wall. In such cases the interactions are induced entirely by the propeller action. With a vessel underway near a bank, this interaction is not dependent on propeller action but can be increased by propeller action. Although these deductions for bank interactions are based on pressures due to the difference in heights of the water on the two sides of the vessel, it is apparent that this difference in heights of the water on the two sides of the vessel is due principally to the inertia of the water and therefore the speed of the water past the vessel or the vessel through the water becomes a matter of great importance.

In wider channels, sixty feet off of the centerline would not affect the steering so much, but if the vessel approached a bank as close as in the above example, the proportions would be still worse, and the interaction would be greater. Of course, the room to maneuver is greater, but the speed of the vessel is usually higher also as this is generally allowed and considered to be good practice, so the result is liable to be equally disastrous unless the channel is wide enough to have the necessary room for maneuvering. Later in this discussion we shall consider cases that actually have occurred, one in a 300-foot channel, one in a 500-foot channel, and one in an 800-foot channel.

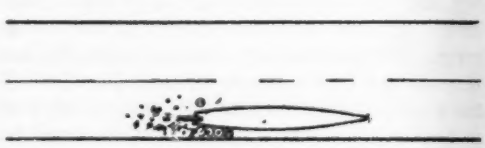


FIGURE 3

Figure 3 shows bank suction produced by the propeller on a vessel which is moored to a solid wall. Water is being drawn by the propeller from the side of the stern next to the wall faster than other water can readily get to that locality resulting in a low level or suction on that side of the stern, tending to draw the stern to the wall.

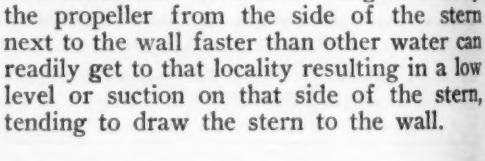


FIGURE 4

In Figure 4 is shown how bank cushion can be produced on the stern of a vessel by backing the engine. The level on the bank side is raised as there is a very restricted egress for the water that is thrown forward on that side of the vessel by the propeller. Naturally, in this case, the stern leaves the wall.

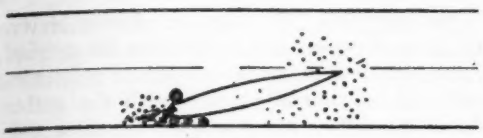


FIGURE 5

Figure 5 shows the high and low pressure areas around a vessel which has sheered from the bank with the engine or engines going ahead and the rudder set to throw the stern off. Perhaps the stern can be brought off by this maneuver and the vessel righted on its course, but this is not always certain as the area of high pressure on the bow cannot be affected, while the suction of the propeller tends to add to the low pressure on the bank side of the stern. The propeller stream unless sharply deflected by the rudder is so nearly parallel with the bank that it may act as an ejector, and prevent the formation of a normal wake or high pressure area on the bank side, and in this way add to the suction on the stern on the bank side. A very important factor in this maneuver is to get the rudder so sharply into the propeller stream that that stream will be thrown towards the bank at such a broad angle that the action and reaction will be to add to the height and pressure on the bank side of the stern.

It should be borne in mind that in the above case the vessel has a swing and that the momentum of so great a weight swinging is of itself a difficult factor to overcome. The low pressure area produced by the propeller on the bank side extends well forward balancing or counterbalancing the high pressure area which is acting against a small rudder area. It is doubtful if this is a very good maneuver when the stern is close to a bank unless the rudder has an extension or lip forward of the rudder stock that will swing to the channel side and catch some of the water from that side and transfer it to the bank side to help produce the high pressure area at the stern on that side.

FIGURE 6

Figure 6 shows the high and low pressure areas around a vessel which has sheered from a bank, with engines backing and rudder in proper position for this maneuver. The vessel should be nearly stopped when this maneuver is used. The backing power of the engine or engines determines the speed at which this maneuver is proper. Single screw vessels usually answer well to this maneuver when the stern is near the starboard hand bank, as right hand propellers have a tendency to throw the stern to port in backing, due to the fact that the pressure on the blades of the propeller while in the lower half circle is nearly double that on them while in the upper half circle, and a large percentage of this pressure is exerted in a lateral direction with a resultant push of the stern to port. The propeller also transfers some water from port to starboard which has a tendency to build up a pressure on the starboard stern and throw the stern to port.

FIGURE 7

Figure 7 shows a twin screw vessel which has sheered from a bank with engine on bank side backing and with engine on channel side going ahead, and rudder used as with vessel going ahead. Notice the low pressure area produced on the wrong side of the rudder, that is apt to more than counteract the high pressure area produced on the hull forward of the propeller on the bank side. This maneuver is not as effective as the maneuver shown in Figure 8.

FIGURE 8

Figure 8 shows a twin screw vessel which has sheered from a bank, that is being maneuvered as suggested by G. S. Baker, in a paper read before the Institute of Naval Architects in England. This, after many experiments with twin screw vessels in the Suez Canal, was considered as being the maneuver with the best chance for success. But this maneuver, like all others, to be ef-

fective requires that the vessel should be running so slowly that it would have considerable reserve power to properly carry out the maneuver. The figure shows that it is a good maneuver, but the psychology of this maneuver is perhaps its best feature, as, to be ready for this maneuver, the pilot will probably run his vessel slower than otherwise. The screw on the bank side is slowed or stopped, the screw on the channel side is run full speed ahead, and the rudder is put over full as shown.

We have first considered cases where the vessel is parallel with the channel, and where the bow has sheered from a bank; let us now consider cases where the bow is near a bank and the stern near mid-channel or near the other bank. These cases give or usually give much better opportunities for maneuvering than the cases which we have just considered. The reason for this is that, when a vessel is maneuvered, the maneuvering forces are applied at the stern through the propeller or propellers and rudder. It is well known that a power vessel which is anchored or moored by the bow can swing itself to different headings but that one anchored or moored by the stern is quite helpless to change its heading. With a vessel running free, the pivoting point in turning is found usually to be about forty per cent of the length from the bow or sixty per cent from the stern. From this we may infer that the stern requires about one and one-half times the sea room that the bow does while maneuvering is going on, and that the stern slues about one and one-half times as far from the main course as does the bow.

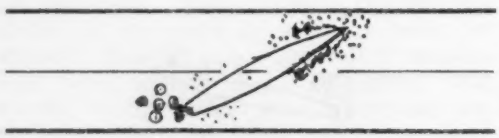


FIGURE 9

Figure 9 shows a vessel approaching a bank at an acute angle. The stern is still near the opposite bank from which the bow has been forced. There is no way that a strong yawing force can be produced on this vessel by its own propeller or propellers and rudder until it is stopped or nearly stopped, and no known agency can prevent it from striking the bank with its bow if it is not stopped. The proper maneuver was to have dropped the anchor on the original bank side when the bow reached mid-channel and to follow quickly with the anchor from the other side, and at the same time back with all power with the helm hard starboard (hard left rudder). Bank cushion will have very little effect on the bow of a vessel at so great an angle with the bank, while bank suction will persist at the stern until the stern is well clear of the bank unless the vessel be stopped.

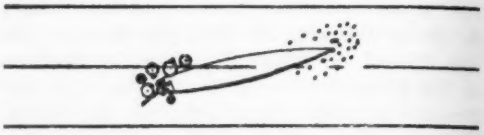


FIGURE 10

Figure 10 shows a vessel in much better position than the one shown in Figure 9. This vessel, if not traveling too rapidly, should right itself in the channel by putting the helm hard a port and applying full power ahead with the port engine if twin screw. The starboard engine should be slowed or stopped. If the vessel has but one screw, full speed ahead for a few minutes with the helm hard a port should be sufficient. If the bow of the vessel is canted to port as shown, backing with a right hand single screw may be used, putting the helm hard a-starboard when the propeller stream is fully developed when backing may also be helpful.

We have now considered the handling of vessels in narrow channels singly. We have stated that the nearer the center of the channel that the vessel is, the freer it is from dangerous bank influences.

The only time that necessity requires that a vessel leave the center of the channel sufficiently to feel bank influences is when it has to moor or pass another vessel or obstruction. Good judgment and skillful handling are always required in such cases, especially if the vessel is large and deeply laden, as such a vessel due to its wide beam and deep draft and great length is affected by the bank much more than smaller vessels.

The meeting and passing of vessels in channels, if running at proper speed, presents no difficulty of itself, as two vessels in such meeting have a tendency to assist each other

and this tendency persists until they are safely by each other. In meeting they have a tendency to keep their bows apart; in passing they have a tendency to parallel each other; and when separating their sterns have a tendency to draw together. These are exactly the influences needed to counteract the influences of the banks which the vessels are near, and to assist the vessels back into the center of the channel. If vessels pass too far apart there is great danger of the bank influences taking charge and causing an accident. Most of the accidents occurring when vessels were passing each other in the Panama Canal, appear to have been due to one or both vessels running at too high speed, or to passing so far apart that one of them came too close to a bank. If both vessels got too close to the banks, the one having the most way on has been the one to suffer more. Likewise if one vessel remained near the center of the channel and the other turned out too far, the one that approached the bank too close while passing was the one that suffered more. Speed of itself is not dangerous unless banks or obstructions are near, and banks are not very dangerous unless the vessel near it has considerable way on. By the word speed is meant reasonable speed.

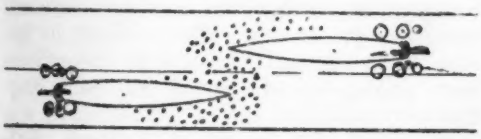


FIGURE 11

Figure 11 shows two vessels meeting properly.

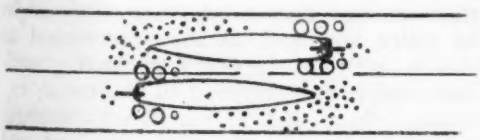


FIGURE 12

Figure 12 shows two vessels passing properly.

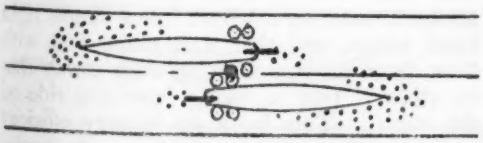


FIGURE 13

Figure 13 shows two vessels separating properly.

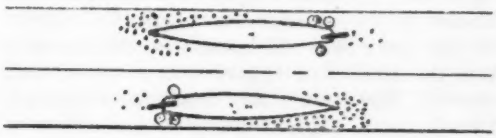


FIGURE 14

Figure 14 shows two vessels passing too far apart. This is dangerous.

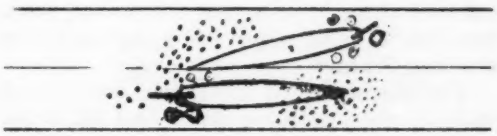


FIGURE 15

Figure 15 shows a case where one vessel has headed into the channel too soon after meeting. Disaster can be averted in such cases only with the greatest difficulty. This vessel might have been steered into this position by the helm alone, but nearly all such difficulties are aftermaths of passing at too high speed or too far apart, or to one vessel being crowded so that it came under bank influences. To begin the correction of this fault too soon would be very apt to cause the sterns of the vessels to touch and damage each other.

Let us now consider some cases which have actually occurred in the Panama Canal in which bank interaction has played a prominent part. Only essential details will be given.

A large tanker, 500 feet long, sixty-eight feet beam, having a dead weight tonnage of 15,500 and drawing just less than thirty feet in fresh water went aground in Mamei Curve. This section of the Canal is a gentle curve not less than 800 feet wide and forty-five feet deep. It presents no special difficulties to navigation. The outside of the curve was on the vessel's starboard side. The rate of speed of the vessel at the time was approximately seven miles per hour.

The vessel swung slightly to the right on entering the curve and left rudder was used to head the vessel back towards the center of the channel and to follow the curve, but this did not prevent the vessel from approaching the right hand bank so closely that bank influence was encountered

which swung the vessel's bow strongly to the left. The helm was then ordered hard right and the port engine was ordered full ahead in an attempt to break the sheer. As the sheer was not broken by this maneuver, the starboard engine was reversed full power. The rudder was then put amidships. Finally both engines were backed when it was seen that grounding on the left bank was inevitable. As the bottom was soft at the place where the vessel grounded, very little damage occurred to the vessel, but it required the shifting of cargo and the assistance of three tugs to get this vessel back into the channel after being aground for nineteen hours.

The machinery of this vessel was found to be in good working order just after the accident, leaving no doubt but that helm and engine orders had been followed. The master and pilot were both satisfied as to this question.

No fault can be found with the maneuvering of this vessel after bank influence was felt. Undoubtedly forces too great for the vessel's engine and rudder power then took charge. The momentum of so great a weight swinging was of itself too much to be easily checked.

A passenger and freight steamer 400 feet long, fifty-six feet wide, drawing twenty-five feet forward and twenty-seven feet aft, grounded after meeting a large heavily laden tanker in a long straight 500 foot fresh water reach. The speed of each vessel was about seven knots per hour at the time of the meeting and their machinery was functioning properly. Sometime before this meeting, the steamer had been stopped in response to a signal, so perhaps was slightly out of position. There were several U. S. naval officers on board the steamer for an observation trip through the canal. These naval officers were on the bridge at the time of the accident and later were excellent witnesses at the investigation which followed the grounding of the steamer. Their testimony emphasized and established beyond question the great distance that the two vessels were apart at the time of passing. This distance could not have been less than 200 feet. As the tanker was in its proper place in the channel, it is evident that the steamer must have been close to the right bank of the channel, which at this point was steep and well defined. Nothing noticeably out of the expected course of events occurred until the vessels had passed each other, when the steamer sheered across the channel and came to a stop with its forefoot in soft mud in a little cove on the left side of the channel. No damage was sustained, the vessel came off with its own power and proceeded through the 300-foot Cut without difficulty. It will be noted that this case is quite similar to the first case, excepting that another vessel was under way in the vicinity in this case.

A foreign, passenger and cargo, twin screw, motor vessel, 427 feet long, fifty-seven feet wide, drawing not over eighteen feet, ran by a signal in the Cut and as a result met another vessel in a curve, or near one. This other vessel was about in the middle of the channel as it had a clear signal and was not expecting to meet a vessel at this point. Each vessel was making about six knots per hour speed over the ground.

The motor vessel came very close to the right hand bank, which was the outer bank of the curve, in passing the other vessel. The vessel in the center of the channel experienced no difficulties, but the motor vessel sheered from the right bank, crossed the channel and struck heavily on the left bank, in spite of backing both engines and letting go anchors. As the sides of the Cut are rocky at this point, the damages sustained were heavy. It was rather difficult in this case to bring out the facts as the officers were foreigners who could not speak English very well, and the pilot's testimony was garbled and of a questionable nature. Suffice to say that this pilot is no longer piloting on the Panama Canal.

No more cases will be given, as the three just considered are typical ones. Except for the fact that they are so few, they might be called standard, as they correspond so closely with nearly every grounding accident which has occurred in the canal, excepting those due to machinery derangements, and errors in understanding and executing orders concerning the helm and engines.

Figure 16 represents a vessel with a towboat made fast on the port bow. It is assumed that the towboat has a single right hand screw, and that it is made fast with lines from its bow only, in such a way that its stern is free to swing from the side of the vessel. This hook up is very efficient as long as the vessel is traveling very slowly, say less than three miles per hour, as, up

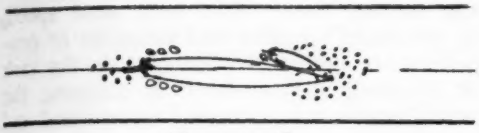


FIGURE 16

to this speed, the towboat is able to throw its stern out at sufficient angle from the vessel to attain a position where it can exert a large percentage of its power in turning the vessel. If the vessel sheers to port when traveling much above a speed of three miles per hour, the towboat is unable to assume a position in which its power can be used efficiently, as its power when working ahead adds more to the speed of the vessel than to the turning of the vessel. If the vessel sheers to starboard, the towboat is in a fairly good position to assist whether the vessel is going fast or slow.

A towboat attached in this way will act as a drag when not using its own power, and in so doing tend to make the vessel yaw to port. This tendency to yaw to port will exist to some extent even when the towboat is using its own power if the vessel's keels are parallel. The bow of the towboat should be held in at a small angle to assist in overcoming this tendency. There is a general tendency for this hook up to sidle to port; requiring the use of right rudder and a slight heading to the right of the base course by the assisted vessel. When near a right-hand bank, this hook up will sheer from the bank rather sharply due more to bow cushion than to stern suction; in other words there will not be quite so strong a tendency for the stern to take the bank, but the bow may slue across the channel so abruptly as to be dangerous, partly because of the drag of the towboat and partly because the towboat prevents a normal flow of water around the bow of the larger vessel, and causes some of the water that would normally go to the port side of the bow to be forced to the starboard side where the resulting pressure forces the vessel away from the bank.

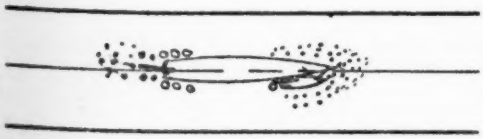


FIGURE 17

Figure 17 shows a vessel with a towboat made fast on its starboard bow. This hook up is seldom used because most towboats have right-hand screws. This tends to prevent the towboat, when backing its engines, from assuming an efficient position for assisting the vessel in turning. Otherwise this hook up should handle well in the right-hand side of the channel. With the few exceptions mentioned, the statements concerning Figure 16 hold good for Figure 17 in opposite order as to right and left.

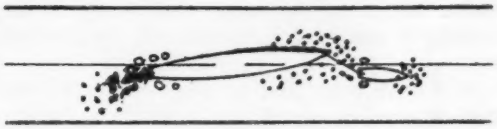


FIGURE 18

Figure 18 shows a vessel with a towboat assisting with a hawser. If a short hawser is used, part of the efficiency of the towboat is lost due to the propeller stream being thrown against the vessel's bow, and this is especially true when the pulling is done at an angle as the quick water from the propeller is thrown to and against the wrong side of the bow of the vessel. This system of assistance is very efficient and not objectionable when the towboats are properly equipped and experienced masters are in charge of the towboats. The towboats of the Panama Canal are not very well equipped for this kind of towing at this time, as their towing machines are too far aft. With a towing machine working properly, it is possible to quickly change the hawser length, and by so doing to operate the towboat at the best possible distance from the vessel.

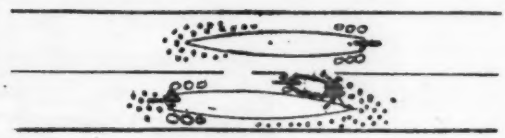


FIGURE 19

Figure 19 shows two large vessels passing each other port to port in restricted waters. One of the vessels is being assisted by a towboat made fast on the port bow. Due to the position of the towboat, these vessels must pass each other farther apart by the width of the towboat than they otherwise would. Thus each vessel is brought about

fifteen feet nearer the banks than they otherwise would be and this of course adds no little danger unless the vessels are traveling very slowly.

We have now discussed and illustrated single vessels operating in restricted waters, vessels passing each other in narrow channels, and vessels assisted by towboats navigating in and passing other vessels in narrow channels.

We have touched on the question of ship interaction and have admitted that it does exist, but only for the short periods when ships are moving near each other. It usually is not dangerous but may be dangerous.

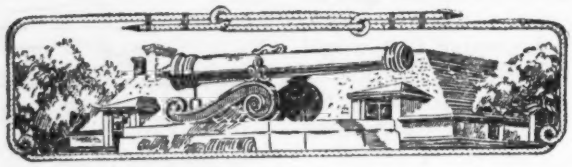
We have seen that a vessel underway in mid-channel is under fairly safe conditions of current pressures and, at reasonable speeds with its machinery functioning properly, should experience little trouble in transiting a channel, provided the channel is deep enough and has no strong, treacherous currents.

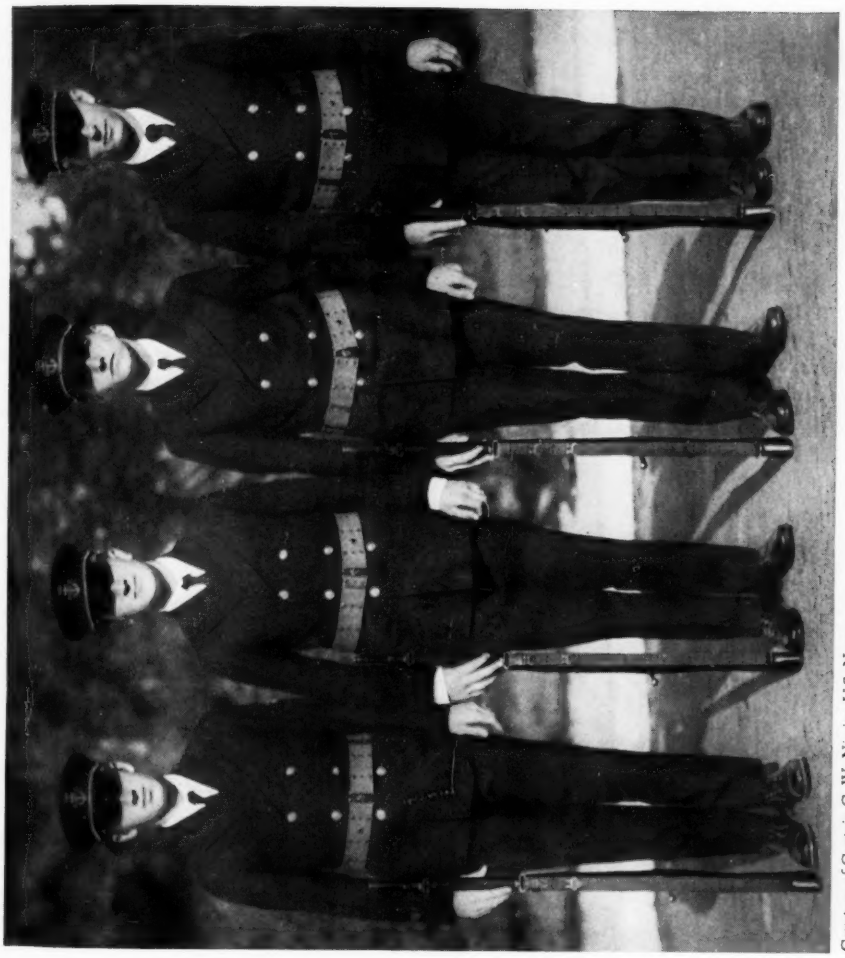
We have seen that when a vessel underway is out of mid-channel, or near any bank, abnormal, unequal current pressures are set up around the hull, causing bank interaction, and that the resultant effect generally is a strong tendency to make the vessel's bow sheer from the bank which it is near, and to make the stern slue towards the bank, and follow the bank to where the bow left the bank thus increasing the sheer.

We have seen that such sheers are dangerous if the vessel is in restricted waters and moving faster than very slow speed, as the vessel's rudder and propeller or propellers are quite often unequal to the task of breaking such a sheer, or stopping the vessel before it has crossed the channel and sustained damage.

We have seen that a towboat or towboats lashed to the bow of a vessel, should be of great assistance to such vessel in cases of bank interaction, provided the vessel is traveling very slowly but could be of little or no assistance if the vessel is traveling faster than very slowly, and that a towboat so made fast to a vessel is always a menace, and constitutes a source of danger to other vessels, the vessel to which it is made fast, and to itself. A towboat or towboats towing with a hawser or hawsers, should be of great assistance in cases of this kind, but must be properly equipped and skillfully handled to be a help instead of a menace.

Although this discussion is rather long, the subject has only been touched. Nothing has been said of vessels rounding curves in channels, navigating in channels with treacherous currents, extremely shallow water, and other conditions usually encountered in rivers. Nor has the question of approaching and leaving docks been touched. Very little dependable data is available on the extent, the height, and other characteristics of the wake or surge that surrounds a self-propelled vessel in restricted waters, and the taking and recording of such data remain an unfinished task.





Courtesy of Captain C. W. Nimitz, U.S. Navy

"ATTENTION"

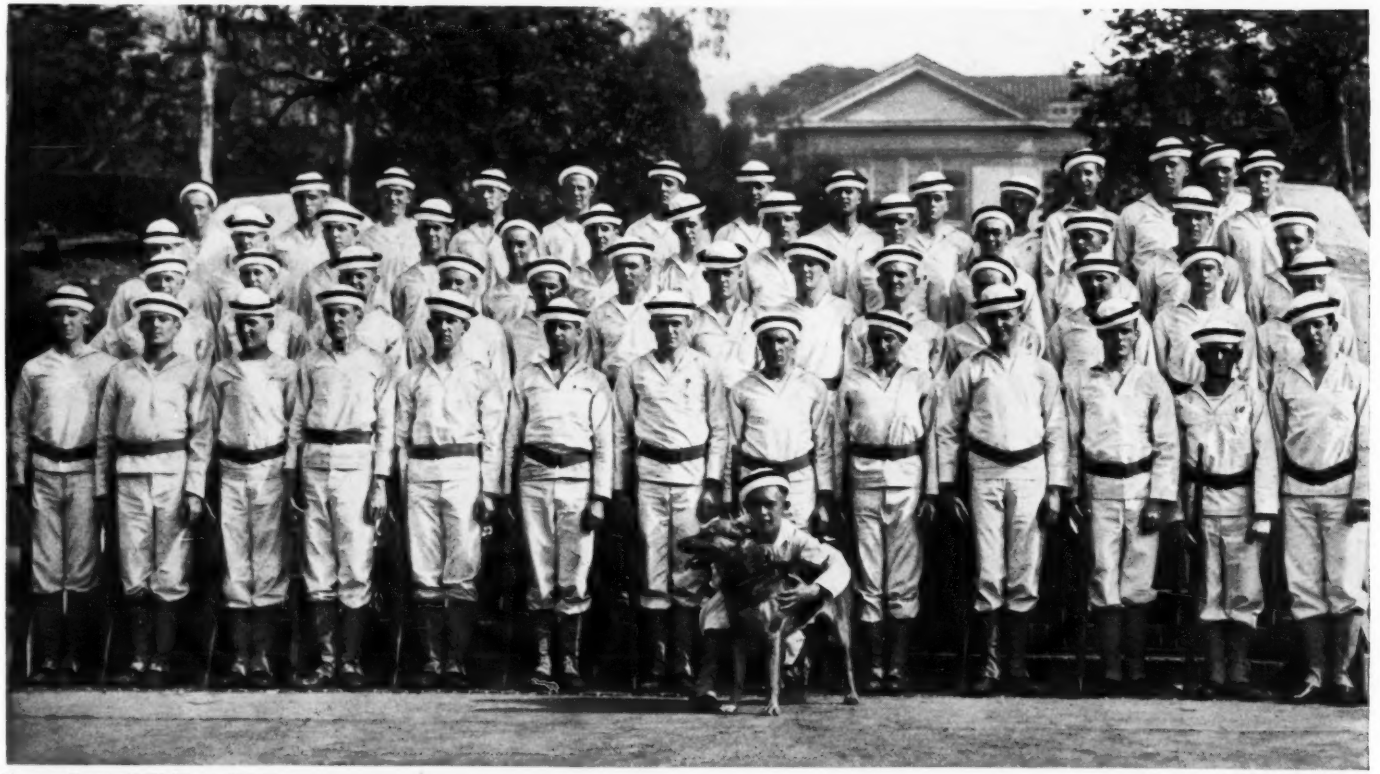
Naval Reserve Officers' Training Corps, University of California.

Courtesy of Captain C. W. Nimitz, U.S. Navy

RESERVE OFFICERS IN THE MAKING

The first Naval R.O.T.C. unit registered at University of California, August, 1926.

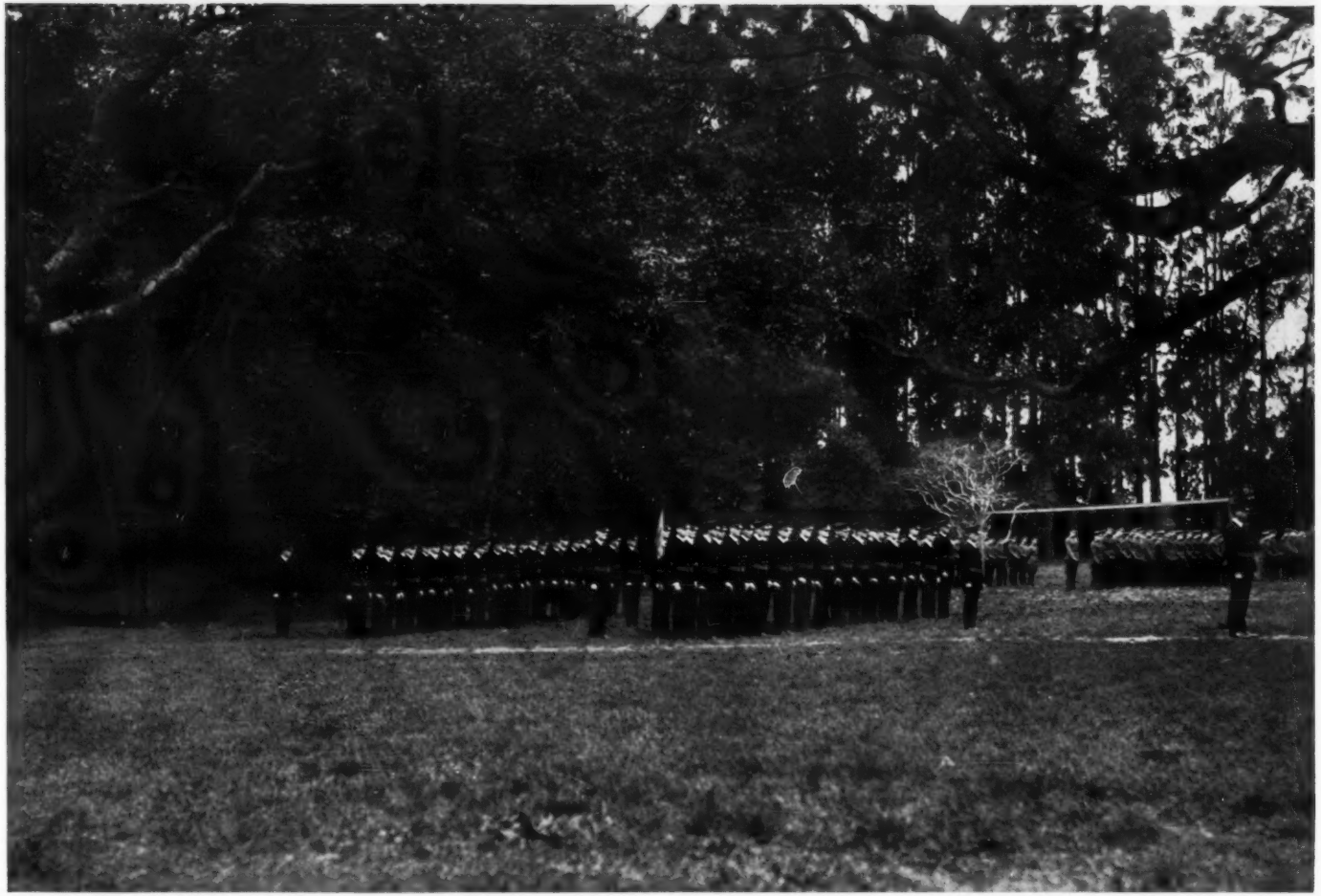
The first Naval R.O.T.C. unit registered at University of California, August, 1926.



Courtesy Captain C. W. Nimitz, U.S. Navy

FIRST UNIFORMS

Naval Reserve Freshmen, Class of 1930, University of California.



Courtesy of Captain C. W. Nimitz, U. S. Navy

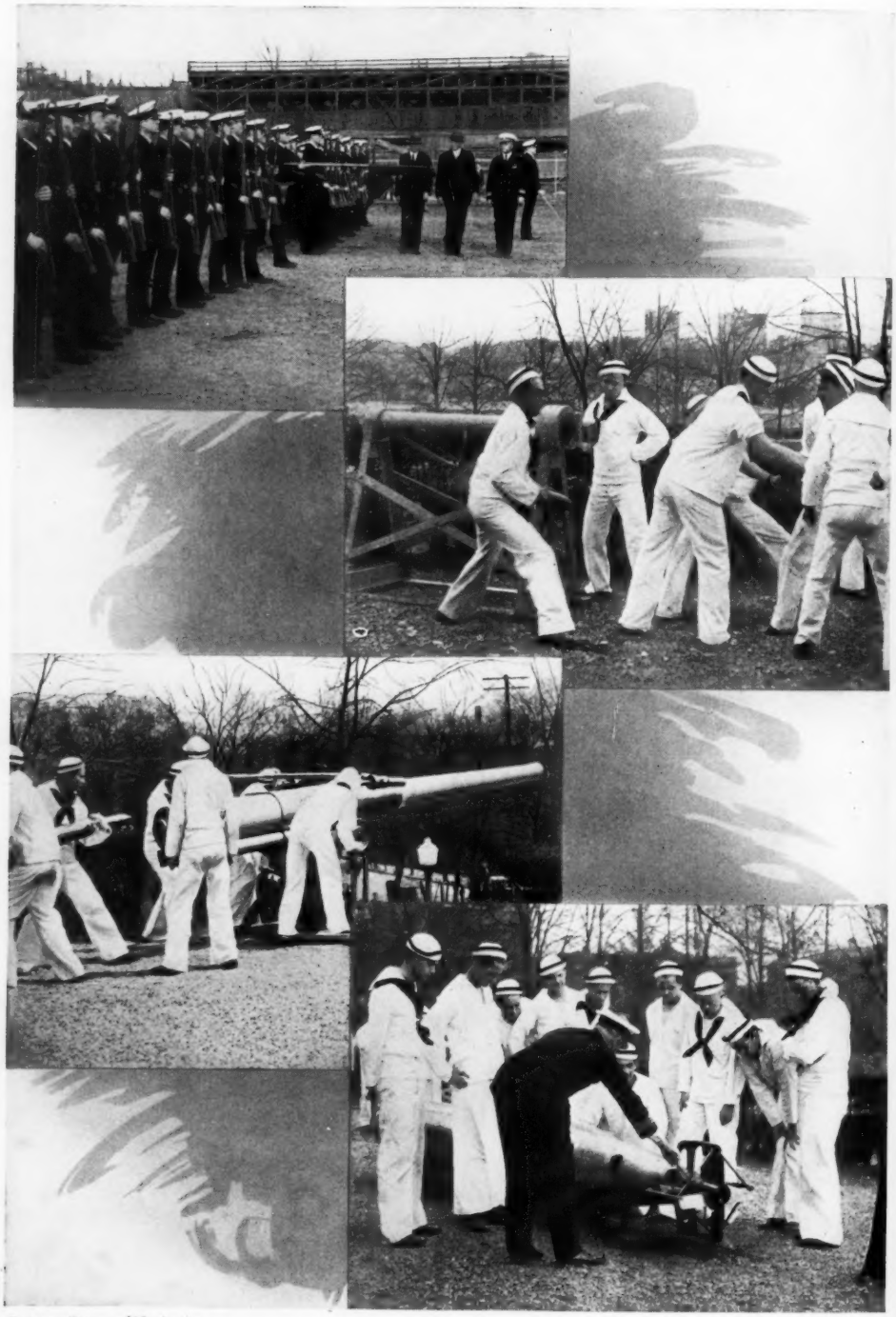
INSPECTION
Naval Reserve Freshmen, Class of 1930, University of California.

Courtesy of Captain C. W. Nimitz, U. S. Navy

INSPECTION
Naval Reserve Freshmen, Class of 1930, University of California.

Courtesy of Captain C. W. Nimitz, U. S. Navy

PASSING IN REVIEW
Naval Reserve Freshmen, Class of 1930, University of California.



Courtesy Bureau of Navigation

ORDNANCE ACTIVITIES

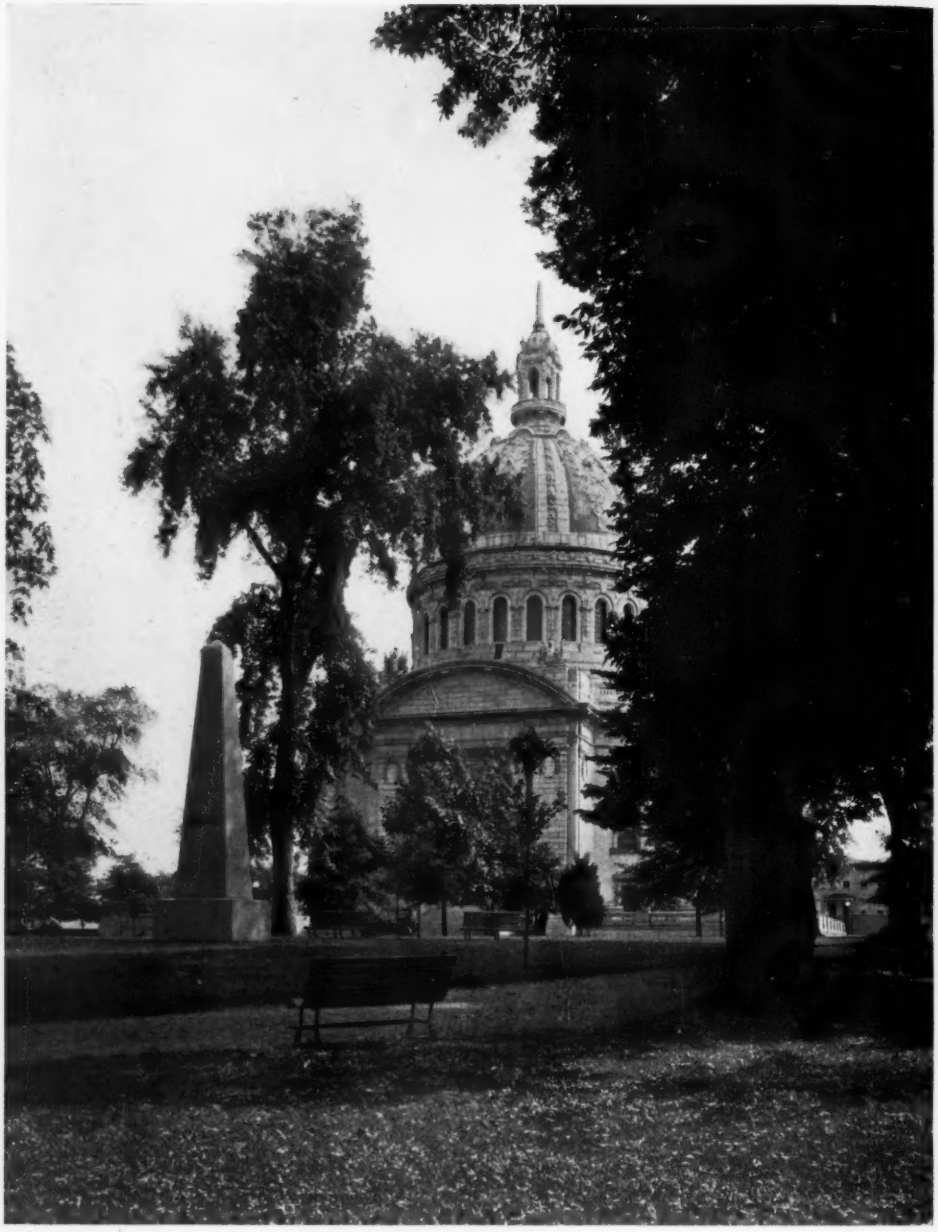
Naval R.O.T.C. unit at Georgia School of Technology.

Upper left: President M. L. Brittain of Georgia School of Technology, (left), Governor L. G. Hardman of Georgia, and Commander J. J. London, U.S.N. (in charge of R.O.T.C. unit) inspect the Naval R.O.T.C. unit.

Courtesy Bureau of Navigation

SEAMANSHIP ACTIVITIES

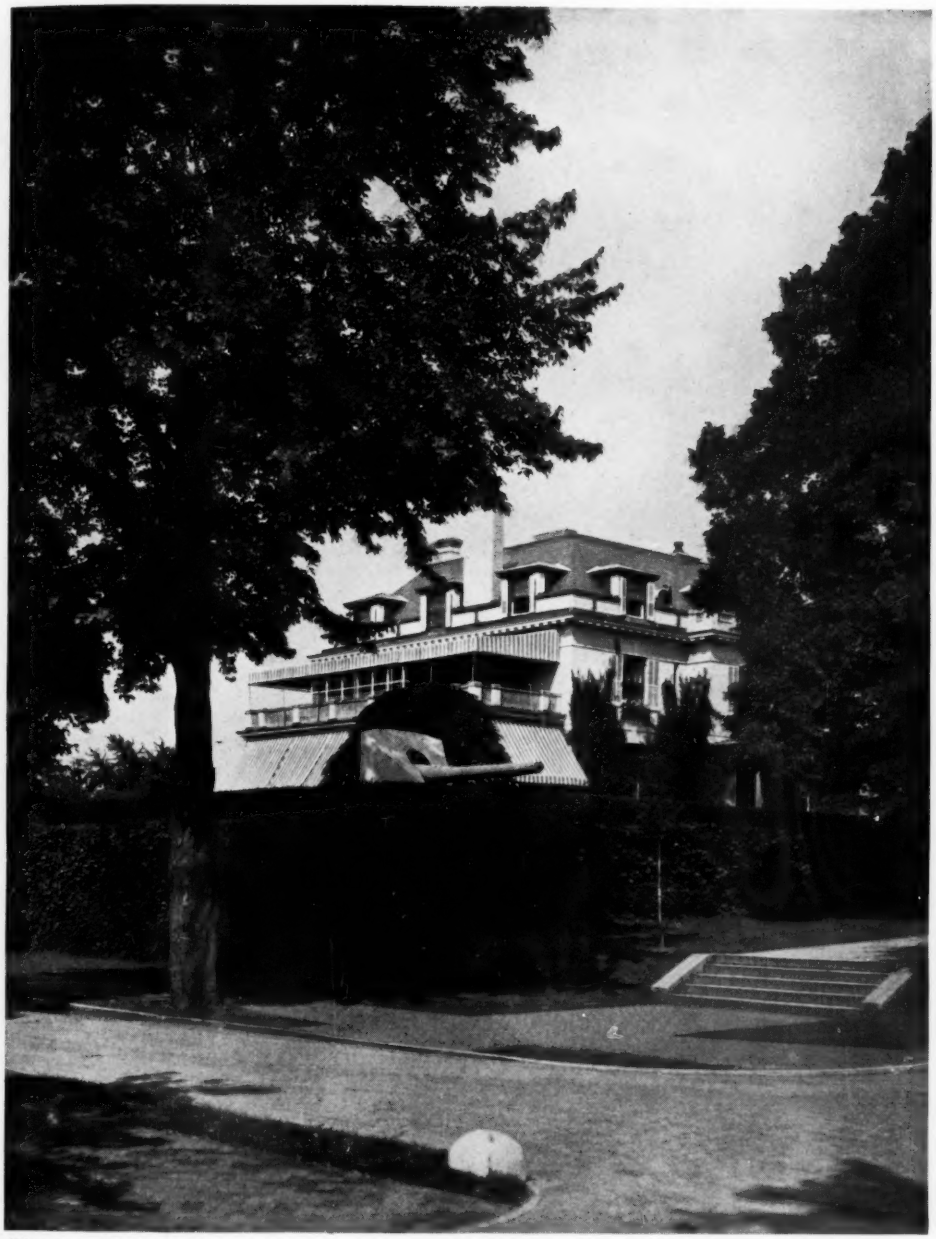
Naval R.O.T.C. unit at Georgia School of Technology.



Pickering Studio, Annapolis

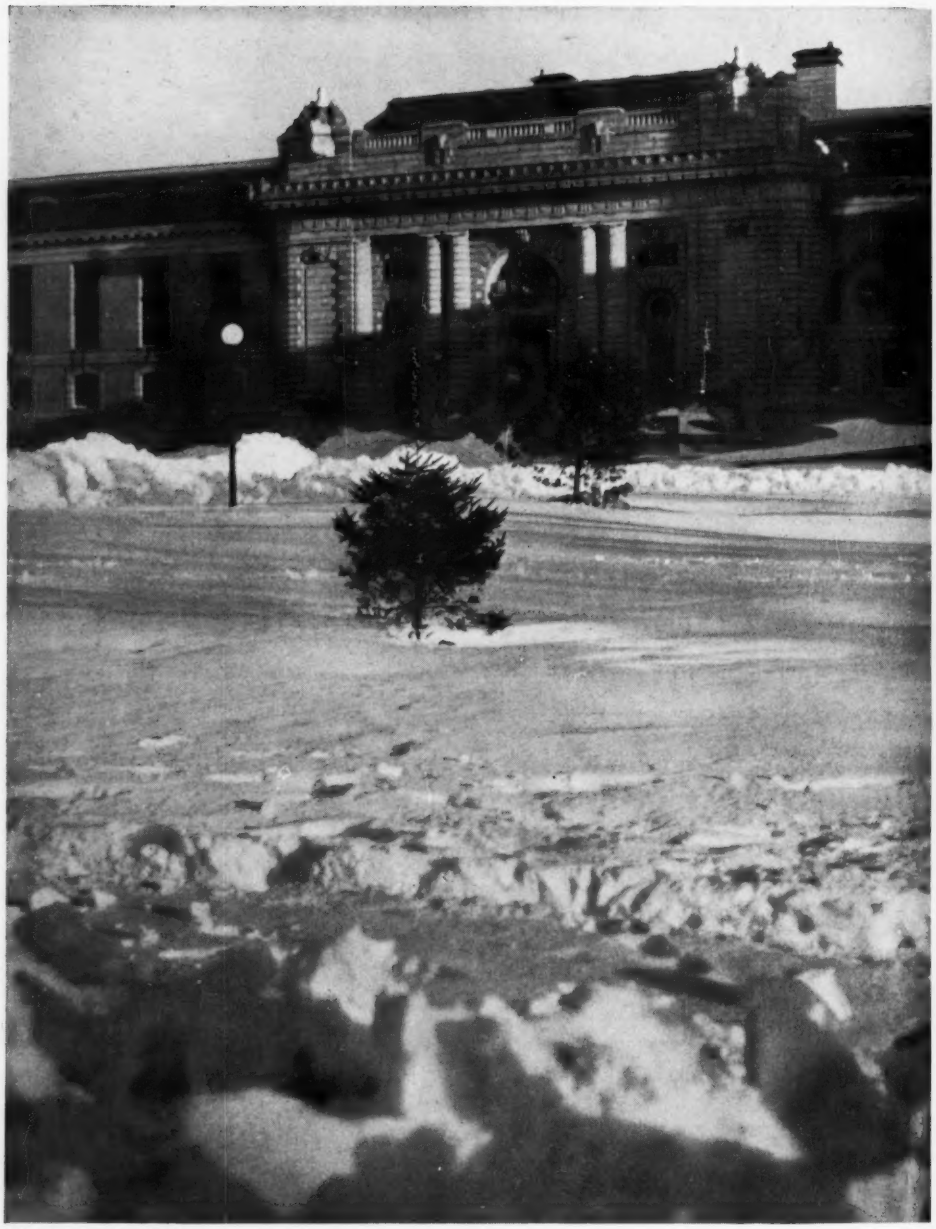
INSIDE THE GROUNDS

The Naval Academy Chapel, with the Herndon Monument in the foreground. (See Secretary's Notes, page 84 of the January, 1928, issue of the PROCEEDINGS.)



White Studio, New York

THE SUPERINTENDENT'S HOUSE
The official residence of the superintendent of the Naval Academy



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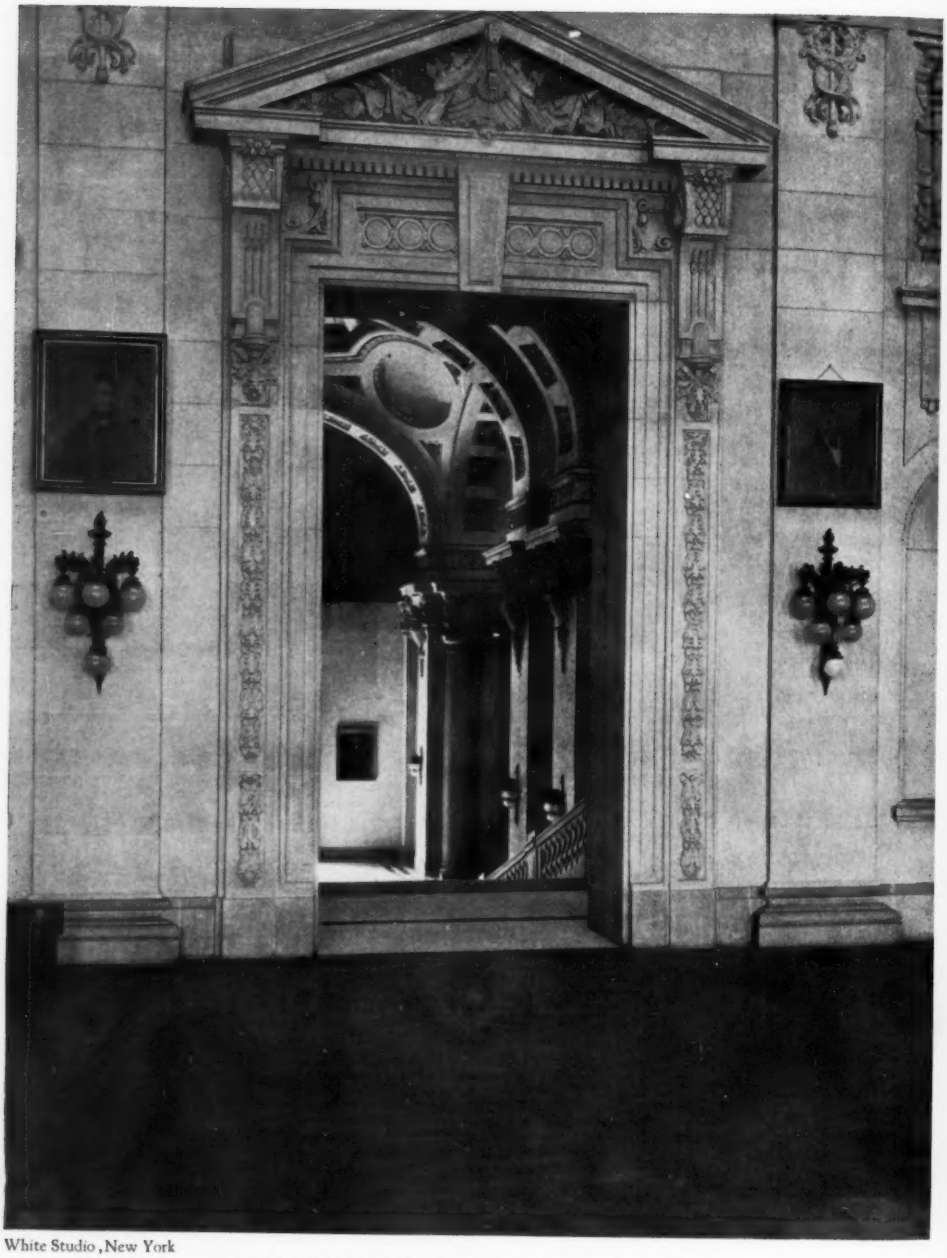
BANCROFT HALL IN WINTER

Main entrance of Bancroft Hall, dormitory of the midshipmen, which is capable of housing twenty-five hundred midshipmen. This building was named in honor of George Bancroft, Secretary of the Navy in 1845, when the Naval Academy was established.

White Studio, New York

STAIRS TO MEMORIAL HALL, BANCROFT HALL

Leading from the main rotunda to Memorial Hall, devoted to memorials to illustrious naval officers.



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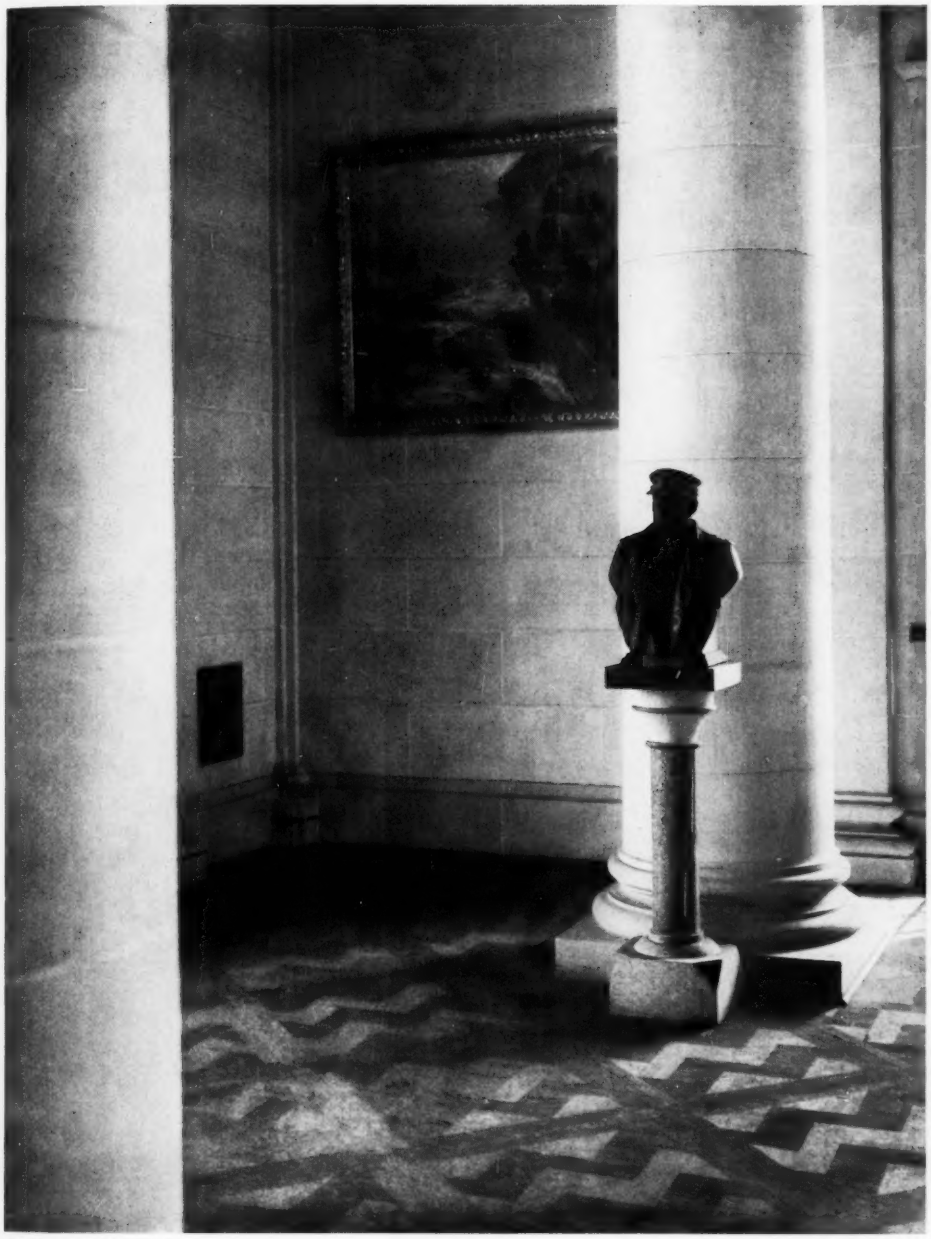
STAIRS FROM MEMORIAL HALL TO MAIN ENTRANCE



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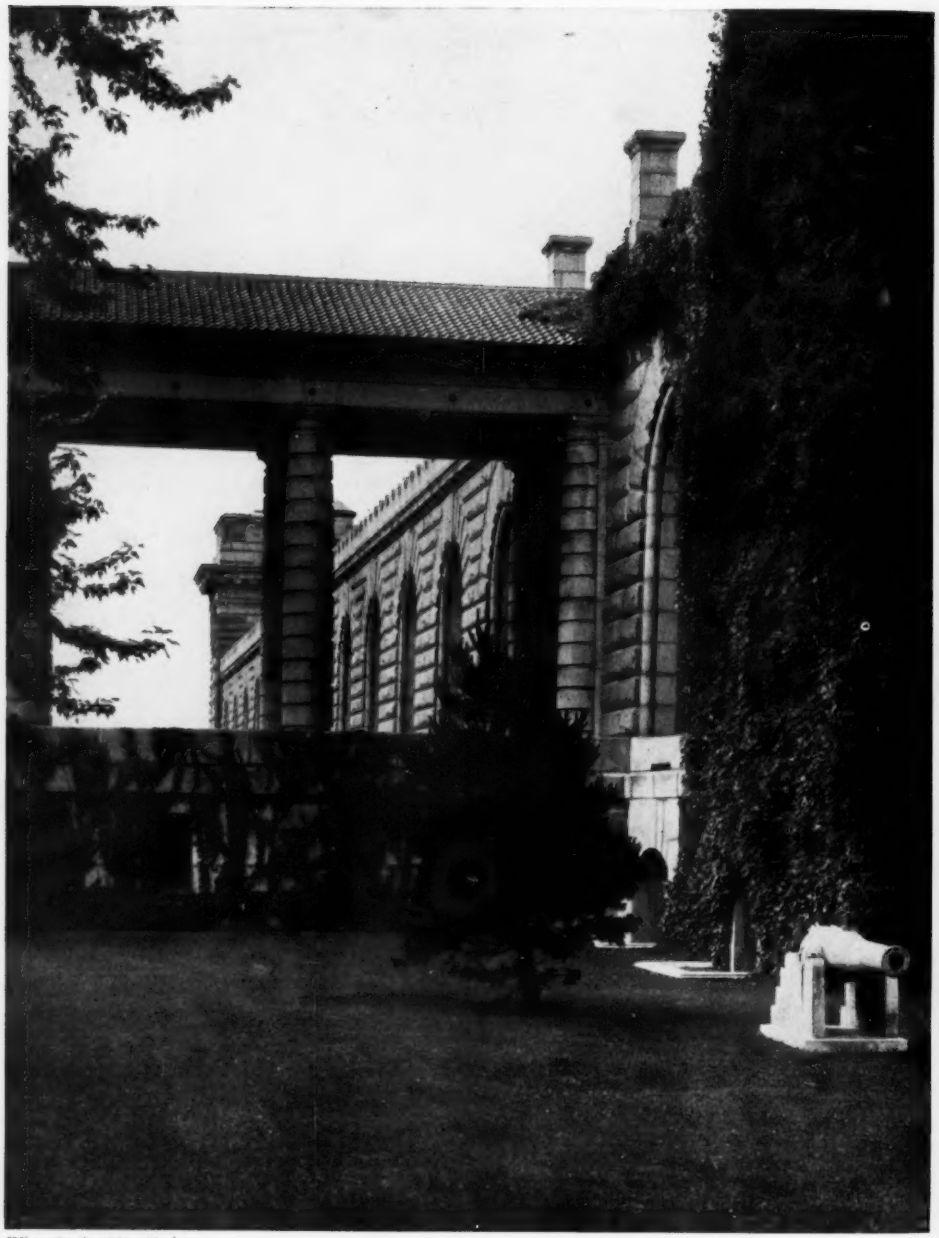
A CORNER IN MEMORIAL HALL
Showing the bust of Rear Admiral Robley D. Evans, U.S. Navy.



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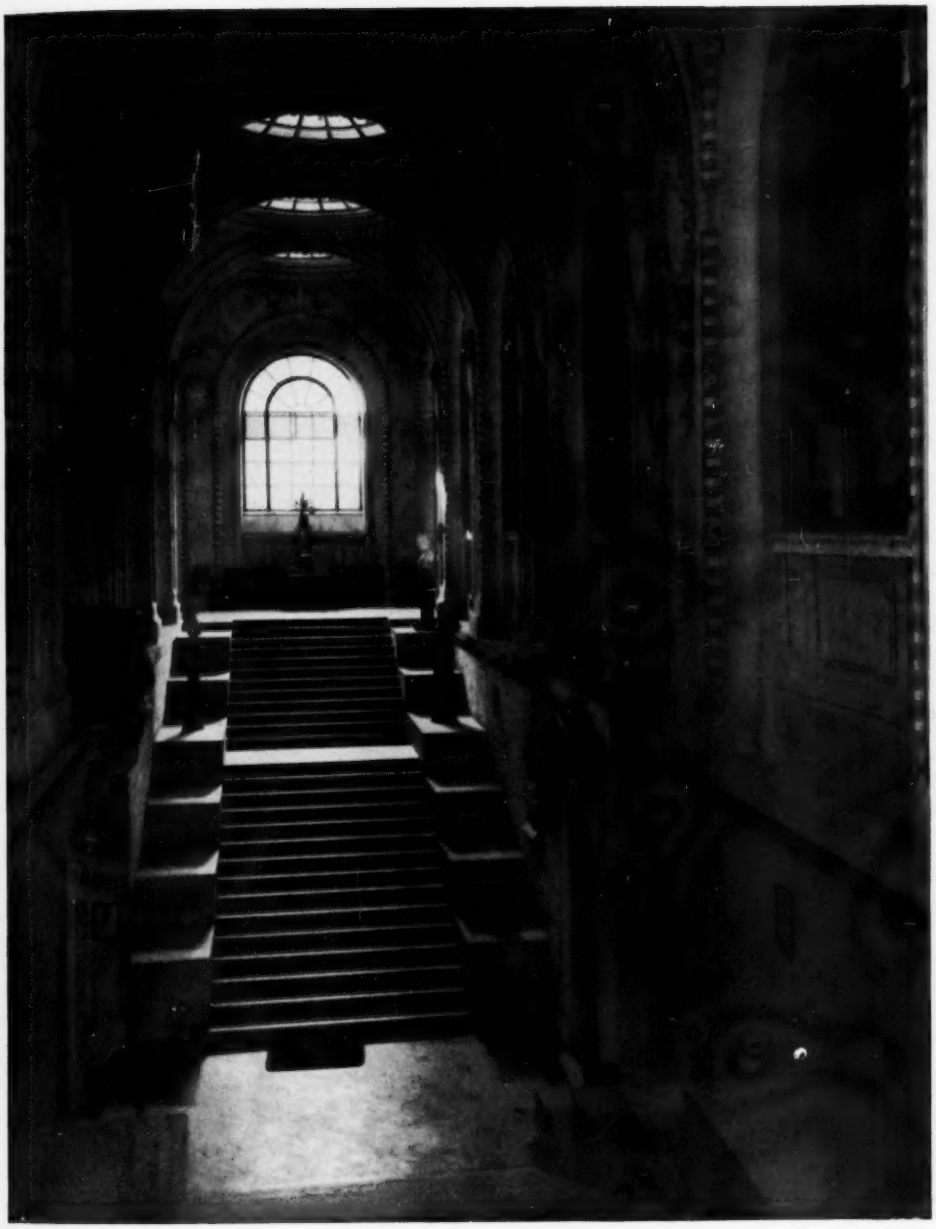
ONE OF THE COLONNADES

The various buildings of the main group are connected by colonnades as shown above. Dahlgren Hall is on the right.



White Studio, New York

STAIRS TO LIBRARY, MAHAN HALL

On either side of the stairs are found pictures of the presidents of the United States.

White Studio, New York

ADMINISTRATION BUILDING, NAVAL ACADEMY

Selection *of* Enlisted Men *for the* Naval Academy

By LIEUTENANT B. W. DECKER, *U. S. Navy*

THE following article is written in an effort to awaken the commissioned officers of the naval service to the realization that there is within their grasp a means of controlling the future of our officer personnel; and to assist those junior officers who are placed in a position to instruct and prepare men for the Naval Academy Preparatory Class for enlisted men.

In 1917 a law was passed allowing one hundred appointments as midshipmen to be made from the enlisted personnel of the Navy and Marine Corps.

It is put squarely up to us whether we make use of this power. So let us delay no longer in developing this source of potential officer personnel.

There is a general tendency in the service to have the wrong conception of the underlying reason for these one hundred appointments. They are generally considered merely as "bait" to tempt a better class of young men to enlist; as an appeal to the imagination of the "poor downtrodden sailor." It undoubtedly makes excellent recruiting propaganda, but that is not their real purpose. By means of these appointments a higher standard will be attained by both the future officer and enlisted personnel.

We, the commissioned officers, have within our reach an opportunity our predecessors never had—that of selecting our own successors, our own junior officers upon whom later we shall depend for the execution of our orders. Our chief petty officers on recruiting duty and on board ship are also enabled to select those men whom they would care to have as their seniors. Heretofore the regiment of midshipmen has largely been made up of candidates appointed from civilian life. We have had to face the problem of working with the material given us. Now we can pick our own candidates with whom we are to work, for we now control twenty-five per cent of the appointments. This means that one officer in four is selected by us to aid us in our work and later to relieve us and to carry on our doctrines.

Looking at the matter from this viewpoint it is at once evident that the greatest care should be exercised in the selection of the best material for development. Statistics show that in many instances this has not been done. Men have been recommended who were palpably unfitted even to approach John Paul Jones' qualification, "None other than a gentleman, as well as a seaman both in theory and practice, is qualified to support the character of a commissioned officer in the Navy." It is the double duty of those selecting candidates to determine by close observation their fitness to become officers as well as their foundation in academic subjects. The Academy can make officers out of the average boy in four years, but a gentleman's education starts much earlier. It is too much to expect the Academy or any institution to create in four years the ideals of a gentleman in one to whom such things are foreign. The candidate should have the foundations of honesty, integrity, and loyalty, in addition to willingness and industry in his studies, and above all, enthusiasm for the service.

Although the examinations have been purely qualifying and in no wise competitive the quota of appointments from the service has never been filled. To be sure we have obtained almost the one hundred candidates each year, which might lull us into a self-satisfied feeling. The desired situation, however, would be to have at least 150 passing all requirements each year, thus allowing some degree of selectivity. In addition this would encourage the increasing

of the quota above the present one hundred, which is also to be desired.

A comparison of the two present systems of making appointments to the Naval Academy is interesting. By comparison of the resignations among the ex-enlisted members of the classes of 1928, 1929, and 1930, with the resignations among the members of those classes appointed from civilian life, it has been found that the ratio is 114 to 106 —practically the same. This seems to show that in "staying qualities" the men from the service have been holding their own during the last few years. By the combined efforts of the officers of the service this percentage can undoubtedly be improved.

Comparing the two systems on another basis: It is not within the power of any congressman to know intimately all the boys of his district, or even those who pass the examination for appointments. The lad arrives at the Academy usually with little inkling of what he is facing, usually with little military training and is no more fitted to study efficiently than are the boys who enter the Naval Academy preparatory class. Morally he is an unknown factor. A few months, and more often two or three years, are required before the undesirables are weeded out. The appointee from civilian life enters and must immediately assimilate a military education, and learn to concentrate and study, while the authorities observe him for qualifications or lack of them, in order to judge his fitness for the profession. This is a difficult task in as large an organization as the regiment of midshipmen.

On the other hand the ex-service man has received a fair amount of military training and a knowledge of military life during his recruit period and time spent afloat. He has been indoctrinated with the ideals of the Navy, and from his instructors has learned what to expect in the Naval Academy. He has learned discipline, both of the body and of the mind, and has had six months' course of study, under conditions very similar to those at the Academy. He is usually in better physical condition than his civilian brothers. In addition, and what is perhaps of most importance, the enlisted man has been under close observation for a year or more and during this time has been influenced along the proper lines by contacts with the officers and petty officers placed over him. A candidate from the enlisted personnel is therefore better fitted physically and mentally, has been more carefully selected for officer-like attributes, and upon entering the Academy is much less liable to fail.

A study of the records of the Naval Academy preparatory classes for the last few years brings forth the interesting fact that a very large majority of the successful candidates from the enlisted ranks have enlisted for the express purpose of entering the Academy. The notable increase in the number of entrants from the ranks in the past few years can, in the main, be attributed to this. Our recruiting officers, therefore, can practically handle the problem themselves by increasing the number of such men, but at the same time not lowering the standards.

It is a known fact that sending a boy to sea for a year does not improve his chances of success in this school. The longer he is out of school the harder it is for him to get down to work again. Afloat, he will not study, for he is enjoying for the first time a taste of freedom and independence as a self-supporting young man and by the time he can become accustomed to this new freedom he is too old to enter the Academy.

From Table 1 it can be seen that last year's class was composed half of men from the station and half from the fleet with the former leading in studies. Of thirty-four men dropped only nine were recruits. Two men from the fleet reported in and immediately put in their resignations, saying that they had told their officers that they did not care to enter the Academy. Two others who had passed the preliminary examination in September were given this same examination about November 15. One received a 2.00 average and the other a 2.20. One man could not write a sentence correctly. Other men could not pass a physical examination and so resigned. It is apparent that the officers of the service must be more careful in their choice of men. The one redeeming factor is that the number of men considered as unsuitable officer material is diminishing. Many officers send us fine lads who have not had the education. Those in command must realize that it is useless to send us boys, no matter how desirable, who cannot meet the mental requirements. It may be worthy of note that three men whom the station board had not recommended for

admission to the class were later returned to us from the fleet as suitable officer material.

It is not advisable to try any high pressure salesmanship methods to get men to come to the school, for as soon as they are away from the influence of their division officers they lose interest and soon resign. This year and last year there were cases of men being sent to the school by persons who were so interested in them as to more or less force them to enter the class. They soon fell behind in their studies as they had not the incentive to work. The dissemination of information among not only prospective candidates but also among "all hands" is advocated, but selling the Academy to the men is not advisable. Our figures show that one out of every two men who enlisted for the Academy succeed, while of those men in the class who did not enlist for the Academy, only one out of four are successful. This means but one thing—the boy, who, from the first, has set his mind on going to the Academy, has two chances to the one of the lad who takes it up as an afterthought.

I refer those officers assigned to the duty of preparing enlisted men for the preliminary examination which is held September 1 of each year, to the Bureau of Navigation Manual article 2002-D and to the Bureau of Navigation circular letters 46-24, 13-25, and 33-26, all of which are practically identical. The first step would be to post on the bulletin boards, publish in the ship's paper, and distribute to men whom you deem eligible, copies of above circular letters. Next call for volunteers. Then inspect their records, noting age, and their past conduct. Talk to their chief petty officers. Then supply them with a set of the following books: Millikan and Gale, *Elementary Physics;* Wentworth's *Algebra,* and *Geometry;* Myers, *Ancient History;* a United States history; and a book on English literature. This should be done early in the spring, and a good schedule laid out, covering the fundamentals of each of the six subjects. It must be remembered that the simple elementary examination held on September 1 (one day only) is merely to gauge the average education of the prospective candidates, with some means of giving a relative standing. Only the average mark is considered; thus a man might acquire a zero in physics, but his history marks might bring the average up to 2.5. In all probability, if his average mark is below a 2.5 on the preliminary examination, he will not be sent to the school; yet his mark should be forwarded to the Bureau of Navigation as no definite average is set as a passing mark.

In our selection of candidates we seldom accepted anyone who had a lower mark than 55 in the first half hour of their O'Rourke's General Classification Test, found on page 9 of service records. Only one successful student in 1926 had a mark less than 63-90, while last year we had only two men whose marks were below this minimum standard of 55, and these men are so far behind in their studies that it was advisable for them to resign.

We find that the number of years in high school means little, due to varying standards in different schools. Even different courses at the same school vary to a great extent in the degree of benefit derived therefrom. We are more interested in the number of years since the boy has attended school. Two years usually means failure and three years is quite hopeless. Few of the men we received last year had had physics, but in its place had had a year of "general science"—whatever that may be! They did not know what they had been taught. Discount "general science" as being of little value. Watch for the college student who, upon investigation, is found to be from a "business college"—a good typist, but never having made the acquaintance of such literary characters as Macbeth and Hamlet.

Do not push your student too much, nor send to the schools a man who has no desire to become an officer, for as soon as they leave your influence, they lose interest and resign.

In marking your student's papers be very strict. It is costly to give a man a passing mark and send him to the school, only to have him returned to you two months later because he could not keep up in his studies. It is almost impossible for a student to make up back work at the school as our course progresses too rapidly and the preliminary examination is so elementary that if a man cannot pass it, his education has been neglected beyond repair.

After you have forwarded your marks to the bureau they will order those men selected to report to the school by November 1.

It is not fair to your men to wait until the last day to report, for they must have time to acclimate themselves to their new conditions, scrub their bags and hammocks, glance over new books, and otherwise become acquainted. I would suggest sending them three to seven days in advance.

Last year we received word of the results three weeks after the final examinations. Those who failed were immediately returned to the fleet, and the successful ones were given thirty days' leave of absence with transportation across the continent prepaid by the government.

As a last word I again call to your attention the importance of filling our quota of one hundred men. Nor should we stop there, but make conditions such that in the coming years we shall be forced to turn down a large number of those who passed, but with low marks. In this way we shall have the means of asking for more appointments for the service. The history of these appointments shows a rapid growth within a few years. In 1914 an act was passed in Congress on June 30, which authorized fifteen appointments. On February 15, 1916, this was increased to twenty-five, and later, on March 4, 1917, again changed to 100. Who would say that this is the limit! When next the regiment of midshipmen is to be enlarged, instead of increasing the number of congressional appointments from three to five, would it not be more satisfactory to make this increase from three to four, and to enlarge the service quota to 200 per year?

TABLE I

WEST COAST

Number of Men Originally in Class

	1924	1925	1926	1927
From Fleet			75	45
From Station			36	47
Marines			7	8
Total	84	100	118	100

Number of Successful Candidates

From Fleet		23	27[1]	17[4]
From Station		18	16	29
Marines		2	1	4
Total	17	43	44	50

Number of Men Who Enlisted for Academy

From Fleet	29[2]	28
From Station	26	42
Marines	2	5
Total	57	75

Number of Men Passed Who Enlisted for Academy

From Fleet	12[3]	13
From Station	14	26
Marines	0	3
Total	26	42

From the above figures for the 1925 West Coast school we find that seventy-seven per cent of the repeaters succeeded on their second attempt, that thirty-nine per cent of naval training station recruits passed the finals, while thirty-six per cent of all other men from the fleet, passed the finals; but if the "repeaters" had not been counted as from the fleet, only thirteen per cent of the men other than the recruits were successful. This seems to prove that recruits are better qualified. I can credit this to but one thing: that on this station greater care is taken in selecting candidates. This in turn is due to the fact that the officer-in-charge of the preparatory class has a better knowledge of the requirements and is more interested in his future students than the average officer of the fleet is. Should the time ever come when the officers afloat will be as interested as those actually connected with the class, the problem will be solved.

[1] Of these, seventeen were men who were attempting it for the second time, or in other words, "repeaters."
[2] Of these, nine were repeaters.
[3] Of these, seven were repeaters.
[4] Of these, five were repeaters.

Diesels *for* Naval Auxiliary Ships

By Lieutenant Ross A. Dierdorff, *U. S. Navy*

In the Naval Institute Proceedings for May, 1925, there was published an excellent article by Captain A. M. Proctor, U. S. Navy, entitled, "Diesel Engines for Capital Ships—A Military Necessity," and the issue of May, 1926, again brought this question to the fore with an interesting paper, "Diesel-Engined Warships," by Naval Constructor M. F. Gunning of the Royal Dutch Navy. Both articles present admirably the arguments for Diesel-engined warships and, having in mind the increasing number of apparently successful motorliner installations of from 7,000 to 9,000 horsepower per shaft, the time seems not far distant when a serious attempt will be made to introduce the Diesel in combatant surface ships. While the requirements of a liner and of a man-of-war differ in many respects, success in the one field points the way to equal success in the other, and it appears that skillful coöperation between the metallurgist and the engineer eventually will reduce the weight, space, and height requirements of the large Diesel to the limits dictated by warship design. Nevertheless, we are dealing here in futures and a few more years' experience probably will result in clarification of the high-powered Diesel situation and permit an intelligent choice as to type, number of units, and form of drive employed.

On the other hand, the case of naval auxiliary ships, such as tenders, transports, and tankers, is entirely different. Here, we practically parallel the highly successful present day motorship in respect to power, speed and size. Here, we are not restricted as to engine size, as in warships. Here, every dollar saved and every man spared will help us to keep more combatant ships in commission. By not adopting Diesels in these ships we are lagging behind in the marine engineering field. It is the purpose of this paper to invite attention to their extreme desirability for the auxiliary ships of the Navy.

Being more or less unfamiliar with the history of the *Maumee* and *Fulton,* I can only hazard the guess that lack of reliability, particularly in regard to the *Fulton,* and a proper disinclination to experiment in wartime, led to abandonment of a praiseworthy attempt to introduce Diesels in this field. It should be remembered, however, that the *Maumee* design dates back nearly twenty years, while the *Fulton* had a light, high-speed, submarine type engine, also of early vintage.

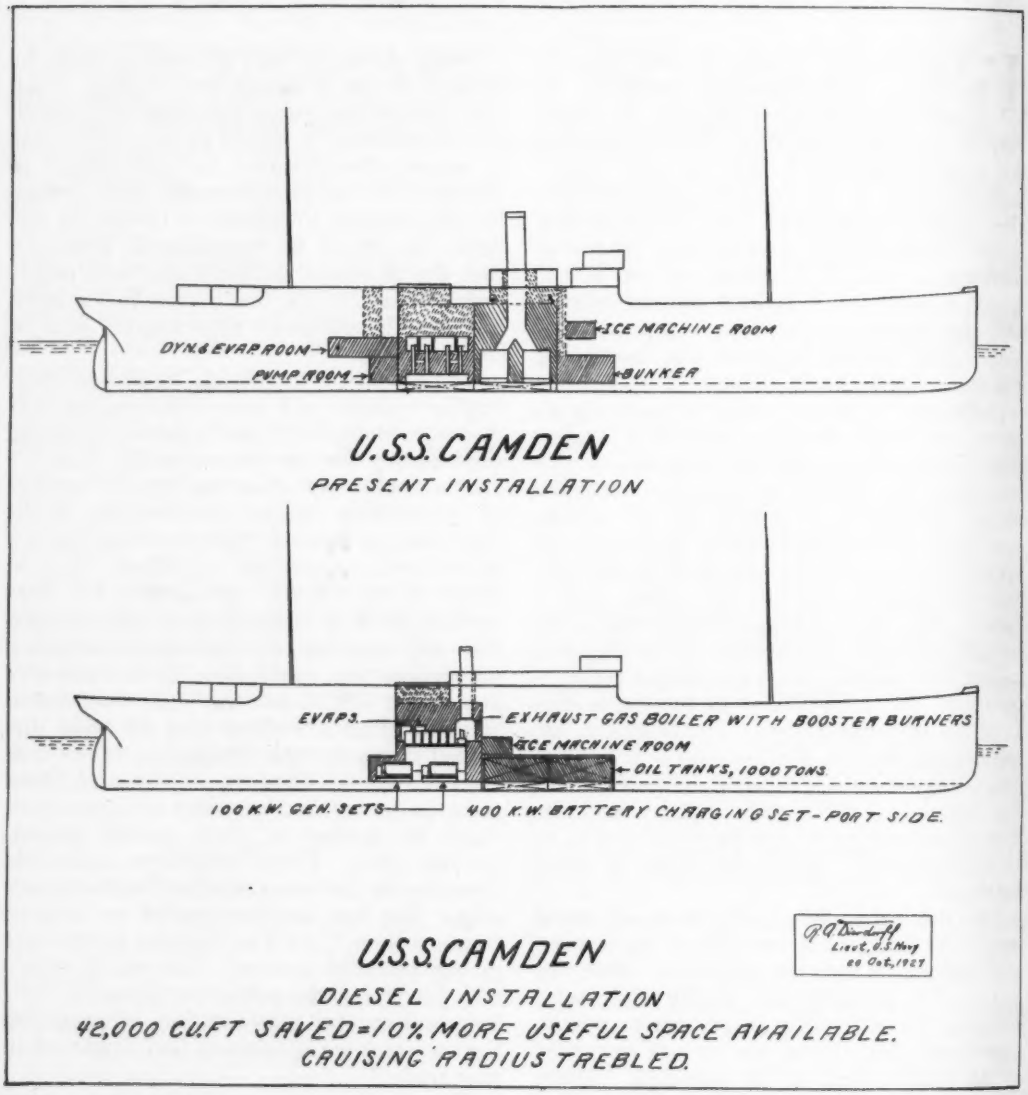
The modern commercial Diesel is a thoroughly reliable and successful engine. If this were not true, Lloyd's survey of world shipbuilding for the quarter ending June 30, 1927, would not show the gross tonnage of motorships under construction to be 1,460,000 as against 1,382,000 tons for all other types—a margin of 78,000 tons in favor of the Diesel. *Motorship* for September, 1927, is authority for the statement that of 150 tankers under construction throughout the world, seventy-five per cent are to be Diesel-driven. Old established shipping lines are discarding or have discarded steam in their freighters. Sir Frederick Lewis of Furness, Withy and Company, is quoted in *Motorship* of September, 1927, as stating at their annual general meeting that, "Every vessel we have laid down in the last two years has been a motorship. The five fast motorships we ordered for our New York-Far Eastern service are giving splendid service. We are in every way justifying the policy we adopted, after long and careful consideration, of replacing the steamers we previously had employed in that trade."

The Italians, in particular, are going ahead boldly with motorliners of sizes, speeds and powers considerably in excess of anything previously attempted. *British Motorship* for October, 1927, published a complete description of the Cosulich motorliner *Saturnia,* which entered the Trieste-Buenos Aires service on 21 September 1927.

This vessel is 631 feet long and displaces 24,000 tons. On trial, her two eight-cylinder, double-acting, four-cycle Burmeister and Wain engines developed 9000 S.H.P. apiece and gave her a speed of nineteen knots. By supercharging, the power was raised to 10,000 S.H.P. apiece and a maximum speed of 21.3 knots was attained. Furthermore, it is stated that no steamer, whether equipped with turbines or reciprocating engines, could have been freer from vibration. Her sister ship—the *Vulcania*—will be ready for service in 1928.

Both of these vessels are surpassed in size and power by the Navigazione Generale Italiana's motorliner *Augustus*, which recently successfully completed her trials and sailed for Buenos Aires. She is 706 feet long and displaces 32,500 tons. Her propelling plant consists of four double-acting, two-cycle, Savoia-M.A.N. engines, each of 7000 S.H.P. *Marine Engineering* for January, 1928, states that she developed a maximum of 28,800 S.H.P. on trials and attained practically twenty knots. The performance of machinery was stated to be completely satisfactory, and marked by an absence of vibration.

To meet the competition of Diesel-driven freighters and to maintain anything ap-



proaching parity with foreign ships on the long distance trade routes, the Shipping Board has converted twelve ships to Diesel-drive and is on the verge of converting twelve or sixteen more. If the Diesel were not thoroughly practical, reliable, and economical, all this would not be true. Private shipping companies are interested in dividends, not philanthropy, and, applying the well-known advertisement to the Diesel, "Such popularity must be deserved."

The writer, having requested battleship duty on the West Coast, has been engineer officer of the East Coast submarine tender *Camden* for over two years. She is a good, reliable old ship, a successful tender, and the cruise has been a happy one. I do not, however, advocate replacing her incomparable collection of Wattsonia and Fultonia with a Diesel, for, aside from economic considerations, this would savor of disrespect for a lady of her age. Still, by comparing her present plant with a possible Diesel installation, it is proposed to present the two extremes of the argument and, from this comparison, to illustrate some of the Diesel's advantages.

The *Camden* was launched in 1900 as the German merchant ship *Kiel,* was seized in 1917, and was converted to a submarine tender in 1919. Her present power plant comprises the following units:

4 B. & W. coalburning boilers, installed new in 1922 and supplied by natural draft.

1 Quadruple expansion main engine of 2500 I.H.P., with attached pumps.

2 Main feed pumps, ex-*DeLong;* built to supply 27,000 H.P.

4 Reilly multicoil evaporators with five distillers; successfully converted to low-pressure operation by ship's force.

5 Turbo-generators—two 400 K.W. for submarine charging; one 100 K.W. and two 35 K.W. machines for ship's load.

3 Air compressors—one for torpedo charging and two for ship's use.

3 Condensers—main, German; dynamo, ex-Eagleboat, as are also its auxiliaries; auxiliary, probably ex-scrapheap.

3 Two ton York CO_2 ice machines.

20 Assorted pumps ranging from a fearfully and wonderfully contrived German flywheel type "Hurdy-gurdy," which also ran a lathe, to several steam launch feed pumps probably acquired without benefit of clergy some dark night at a navy yard.

4 Ex-minesweeping winches.

1 American anchor engine.

2 Ash-hoist engines, one American, the other, German.

1 German steering engine.

1 Ash-ejector and pump, ex-*Utah,* installed last year after a four-year battle. It has proved quite successful except that the large size of the pump puts us in the class of the steamboat that had to stop to whistle. At any rate it has practically broken up the jolly sport, formerly enjoyed by the ash-hoist detail, of dropping spuds down the ventilators on any heads which appeared beneath. This will be good news to Mr. Jerry Welsh, late "Wathertinder," first class, South Boston, '98, whose subterfuge of having a henchman imitate his famous warcry of "Ten more buckets!" while he lurked behind a spud locker, was only partially successful. In Mr. Welsh's own words, "Two of them muzzlers got away."

The sketch shows the Camden's present arrangement of machinery compared with a Diesel plant consisting of a 2,500 I.H.P. main engine, a 400 K.W. submarine charging set, and three 100 K.W. generating units supplying electrically driven pumps, winches and auxiliary machinery. With the exception that a submarine charging set is included, this arrangement is practically identical with that of hundreds of successful motorships. In fact, it is believed that the question of fresh water constitutes the only real difference between motorship and naval auxiliary requirements, and this certainly can be easily circumvented. So far, little has been done toward utilizing the heat in Diesel exhaust gases. Their temperature averages about 700 degrees Fahrenheit, and the heat contained amounts to about twenty-five per cent of the total calorific value of the fuel consumed. By passing these gases through a boiler, fitted with booster burners, ample steam could be provided to run the distilling plant and to heat the ship when necessary. In the case of the *Camden,* a plant with a daily capacity of 12,000 gallons would be ample, especially since the elimina-

tion of make-up feed and a fireroom crew would cut our present consumption by at least thirty per cent. Torpedo charging would be done by an electrically driven compressor in the torpedo room. Since we have given but six battery charges to submarines in the past two years, one 400 K.W. charging unit would, in my opinion, be ample for this purpose. A geared drive could well be employed on this unit to keep the generator frame size within reasonable limits. I have shown the ship's fuel tanks in the lower fireroom and former reserve bunker spaces, as the double bottoms are used for water and submarine fuel oil.

A six-cylinder, single-acting, four-cycle main engine, operating at from ninety to 110 R.P.M., and six-cylinder, four-cycle generating units, preferably of the mechanical injection type, would be quite suitable for this vessel. However, there is a wide choice of successful two and four-cycle, single and double-acting engines available. Such an installation is perfectly feasible and would be more reliable than the average steam plant. I now propose to detail its advantages as applied to this ship and to other auxiliary vessels.

To consider first the factor of space, there would result a saving of about 42,000 cubic feet on the *Camden,* an additional ten per cent in which to perform her legitimate functions as a tender. This would be invaluable, as every nook and cranny is now crowded to the limit. On oil-burning ships the space saved would, in general, be less, but it would still be appreciable and valuable. Diesel-drive would mean that practically all the fireroom and uptake space would be available for more useful purposes. Few naval auxiliary ships could not employ such space to good advantage and it would result in just that much more tanker or tender or supply ship for the same tonnage.

Insofar as personnel is concerned, the *Camden,* being a coal-burner, carries a considerably larger black gang than she would require as an oil-burner. We could dispense with the following ratings by adopting Diesels.

2	Watertenders, first class.
2	Watertenders, second class.
1	Boilermaker, first class.
29	Firemen, first, second and third class.
34	Total

Their pay amounts to about $20,000 per year and the value of their ration to $6,000 —a total of $26,000. Their absence would reduce the living space required, the water used, and the perfectly astounding number of ailing aunts, cousins and grandmothers, whose condition has the uncanny faculty of becoming very critical on Friday afternoon about three o'clock. It would also release the 1.7 mess-cooks who serve them. A list of nominees for the seven-tenths billet is available in the log room.

On oil-burners, the saving would be smaller but would average, I believe, about twenty men per ship on the forty auxiliary ships now in commission, a total of about 800 men who could be made available for fighting ships now short-handed or out of commission.

Boiler cleaning is one of the dirtiest, most tedious, and at the same time, most important duties, which fall to the lot of the engineer's force. On combatant ships, which ordinarily steam at fractional boiler power, it is almost always possible to boil out and clean boilers while underway. Auxiliary ships, however, generally plug along on all cans and the galley range and, in port, steam on half and, in some cases, two thirds of their boilers, to carry the auxiliary load. We find that one boiler is just under our usual port requirements and have to use two. And I know from personal experience that this situation often makes it extremely difficult, and at times almost impossible, properly to clean boilers as required by engineering instructions and good practice. These facts are strongly substantiated by Bureau of Engineering's circular letter A-25, B-17 of April 27, 1927, which states that, "A survey of the boiler records of minesweepers, tugs, gunboats, and *auxiliary* vessels for the calendar year 1926 indicates that more than forty percent of the boilers of these vessels were under steam in excess of 1,000 hours between successive cleanings and over-haulings," and directs that all such cases shall be reported, with reasons. If boiler cleaning is difficult in peacetime, it will be doubly so in time of war.

Add to the joys of boiler cleaning a leaky condenser or two, a few hundred steam joints to be kept tight, grease extractors, pumps, five-thirty A.M. water hammers in the winch lines which bring down the ward-room's wrath upon the luckless chief, winches to worry about in cold weather, and

all the other ills which beset a steam plant, and I, for one, vote for the Diesel with electrically driven auxiliaries. The engine itself may require a little more care than a reciprocating steam or geared turbine plant, and the generating sets will undoubtedly need more attention than turbine-driven units. However, the overall upkeep of the engineering plant would be much less than with steam. Skeptics are referred to former steam engineers who are now running motorships. All whom I have asked, including some of the ultra-conservative Scotch variety, preferred the Diesel on this score. For me it will be a red-letter day when, for the last time, I assist in removing a motley array of crustaceans, defunct sardines, and surveyed socks from a condenser, and then stand on my head and drop candle grease in my eyes while searching for split tubes.

Insofar as habitability and cleanliness are concerned, the elimination of hot firerooms, engine-rooms, and uptakes would make ships much more comfortable and livable, especially in the tropics, and it is believed that even the most rabid chief engineer would eventually become reconciled to the fact that there would be no more tubes to be blown during the movies or right after the first luff had varnished the gig.

In general, the superior fuel economy and consequently lowered costs conferred by the Diesel show to greatest advantage on the long trade routes. Hence savings under this heading would be greater in the case of transports, tankers, and naval cargo ships, than in the case of tenders and repair ships. The latter would benefit in a greater degree by decreased fuel costs while at anchor or in a navy yard status. Varying efficiencies, operating requirements, and fuel prices render generalization difficult. A proper solution would, of course, require individual analysis for each vessel concerned. I have made one of the rough and ready sort for this ship, covering average operation for a year. In so doing, it is hoped that my arithmetic will reflect no discredit upon the postgraduate school and that savvier classmates will not check computations to the third decimal with a view to scalping me in subsequent discussions. In making this analysis, the following averages and assumptions have been used:

PRESENT PLANT

a. Average speed—ten knots.
b. Average daily coal burned at this speed —thirty-two tons.
c. Average I.H.P. for this speed—1,600; attached pumps considered the equivalent of the Diesel's compressor.
d. Average daily coal consumption at anchor—twelve tons.
e. Average daily coal consumption, navy yard status—six and one-tenth tons.

DIESEL PLANT

a. Estimated fuel consumption of main engine—.42 pounds per I.H.P. per hour.
b. Estimated fuel consumption per K.W.H.—.60 pounds.
c. Estimated daily electrical load—2,000 K.W.H. underway; 3,000 K.W.H. at anchor.

Using these figures, the estimated main engine fuel consumption underway at ten knots equals $1{,}600 \times .42 \times 24$ or 16,128 pounds per day. The generating unit would require $2{,}000 \times .60$ or an additional 1,200 pounds per day, and to this would be added about 2,240 pounds of oil for booster burners and galley. This totals 19,568 pounds per day, or 8.73 long tons, if my slide rule is not warped. Using 7.5 pounds to the gallon, this amounts to 2,067 gallons or 62 barrels. Those who figure liquids in pints and quarts only will have to make their own computations.

At anchor, the estimated consumption would be $3{,}000 \times .60$, which equals 1,800 pounds or 240 gallons. Adding to this an average of two tons or 4,480 pounds for distilling, heating, galley and foundry, we ar-

Coal	Diesel Oil			
at $6.53		at $2.59	at $1.87	at $1.15
UNDERWAY				
32 tons—$208.96	62 bbls.	$160.58	$115.94	$71.30
AT ANCHOR				
12 tons— $78.36	20 bbls.	$51.80	$37.40	$23.00
NAVY YARD STATUS				
6.1 tons—$39.83	3.6 bbls.	$9.32	$6.73	$4.14

rive at a total of 6,280 pounds, 2.8 tons, 840 gallons, or twenty barrels. Operating in a navy yard status, it is estimated that 3.6 barrels per day would be a fair average for galley, foundry and heating.

Last year submarine Diesel oil prices varied from $2.59 to $1.15 per barrel. I have used these two prices and also an average price of $1.87 in making the tabulation of fuel costs above. $6.53 per ton was used for coal.

On the basis of fifty days underway, 150 days at anchor, and 165 days in a navy yard status, the estimated total savings in fuel costs effected by the Diesel would be:

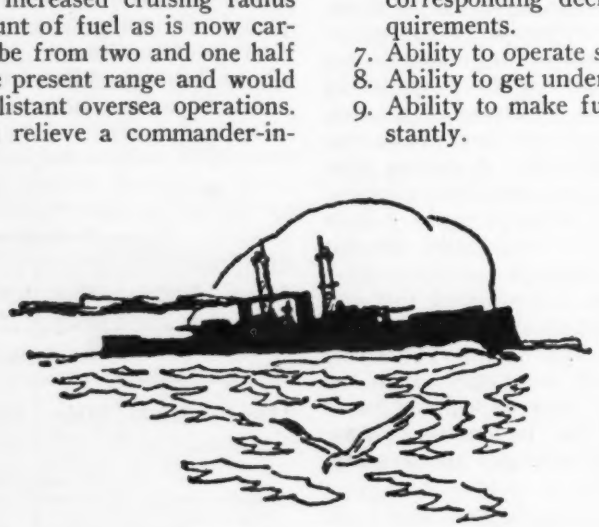
Diesel oil at	$2.59	$1.87	$1.15
Yearly saving	$11,437.00	$16,256.00	$21,075.00

These figures added to the estimated yearly saving of $26,000 on personnel, gives a gross annual saving of $37,437, $42,256 and $47,075 respectively. By following merchant marine practice and using heavier and cheaper oils, these figures could be increased. Even as presented above, similar savings by all auxiliary ships would go far toward paying the fuel bills of combatant ships engaged in searching for non-stop aviators who stopped.

Important as would be the foregoing considerations, the military advantages of the Diesel are paramount. First and foremost comes the vastly increased cruising radius on the same amount of fuel as is now carried. This would be from two and one half to three times the present range and would be invaluable in distant oversea operations. It would at once relieve a commander-in-chief of many worries as to the endurance of his auxiliary ships and, at the same time, would permit him to devote practically his entire tanker capacity to the needs of combatant ships. This feature would be a godsend to the harassed individuals who were endeavoring to propel a bevy of certain well and unfavorably known destroyers any great distance. And now that Bath and Cramps have reaped the reward of virtue by going bankrupt, it is to be feared that the other brand will, like the poor, be always with us. Furthermore, a Diesel operates practically without smoke and a glimpse of present day fleet maneuvers will reveal to anyone that auxiliary ships are now the worst offenders in this respect. The Diesel also requires only a few minutes to get underway, and can work up to full power almost instantly. These are valuable military features and well worth accomplishment.

To sum up, Diesels would confer the following important advantages upon the auxiliary ships of the Navy:

1. Greater useful space available in any given size of ship.
2. Fewer men required and hence more men available for combatant ships.
3. Cheaper and greatly simplified upkeep and overhaul, with special relation to boiler cleaning and condenser troubles.
4. Improved habitability and cleanliness.
5. Lower fuel costs.
6. Greatly increased cruising radii with corresponding decrease in tanker requirements.
7. Ability to operate smokelessly.
8. Ability to get underway at short notice.
9. Ability to make full power almost instantly.

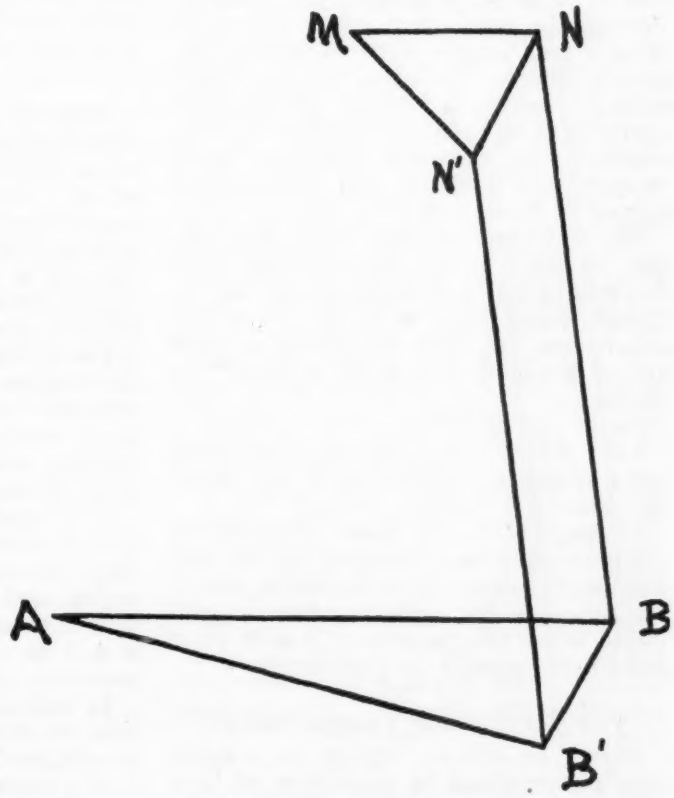


The Effect *of* Current Upon Target Approaches

By COMMANDER CONANT TAYLOR, *U. S. Navy*

THE statement has been made in an official publication that a cross current at short range battle practice would cause the ship and target to make good non-parallel courses over the ground and thereby make the set-up on the range keeper erroneous. I have always thought that the first part of this statement was true but that the second part was not true, and these two conclusions I could not reconcile. Recently I took time to really solve this problem, and I present the solution in the hope that the confusion of thought on the subject will be removed both in individual minds and official publications.

In the diagram the parallel lines *AB* and *MN* represent the motion of the ship and target with respect to the water in a given time.



If *BB'* represents the set and drift of the current during that time experienced by the ship, and *NN'* the same for the target, it is evident that these two lines are equal and parallel.

Hence *AB'* and *MN'* represent the motion of the ship and target with respect to the ground. These two lines are evidently not parallel.

The line *BN* represents the range and bearing which should be attained. The line *B'N'* represents the range and bearing actually attained. But *BN* is equal and parallel to *B'N'*, hence the cross tide has not caused any error, for the above holds true at any instant.

The answer to the apparent paradox lies in the fact that the ratio of *AB'* to *MN'* is different from the ratio of *AB* to *MN* by just the right amount to correct for the convergence between the courses made good, *AB'* and *MN'*.

Similar reasoning shows that currents cause no errors in torpedo practices where the target is underway, nor in mooring board problems when the guide is underway.

Of course this is all based on the assumption of a uniform current over the area under consideration.

A Naval Aviator *in the* Making

By LIEUTENANT S. H. WARNER, *U. S. Navy*

ATTRIBUTES OF AN AVIATOR

IT IS interesting to learn that there is no special type of man who can be pointed out as a potential aviator. Of course, there is the hero-aviator in the movies, who is always a smiling Adonis, but in actual practice it is otherwise. One may be short and bow-legged, or tall and awkward; high-strung and vivacious, or dignified and proper. There is something else that is required, something psychological. Perhaps the type which comes nearest to being a good aviator is the successful, all-around athlete. The same faculties which make for success in athletics are necessary attributes to an aviator. Presence of mind, confidence, aggressiveness, endurance, quick thought, sure judgment, and instantaneous action: all these, and more, are necessary.

The statement has been made that anyone can learn to fly. Given enough time this may be true to a certain extent, but the United States Navy does not go on this assumption. In order to become a naval aviator one must learn to fly by himself in ten hours.

Could you do it?

Let's follow a class through their many sided course of instruction at the Naval Air Station, Pensacola, Florida.

Pensacola is the only station where officers are qualified as naval aviators and for this it is ideally located. It is situated on beautiful Pensacola Bay with its miles of land-locked water and the climate is such as to make flying possible the year round.

THE ELIMINATION PROCESS BEGINS

Before an officer's request for aviation duty is considered he must have at least two years sea duty to his credit, be under thirty-one years of age, and have passed a preliminary physical examination. This is but the beginning of the elimination process in the making of a naval aviator.

When a new class arrives in Pensacola they are given a hearty welcome—by the automobile dealers—after which they are given another "physical exam," the stiffest that science and ingenuity can invent. Along with this they are given a psychological examination. You may be a perfect specimen of the *genus homo*, but there are other things of equal importance.

By the time the flight surgeons have finished examining the class many more have been dropped, but cheer up—the elimination process has just begun and the course lasts approximately eight months.

GROUND SCHOOL

Naturally, everyone wants to start flying immediately, but during the first month the entire time is spent studying in ground school. This is time well spent, however, for one becomes indoctrinated; learns what aviation is all about; and realizes that, unless one is well versed in all the subjects taught, his ability as a flyer will be of no practical value in the Navy.

The following subjects are studied: indoctrination, navigation, aviation engines, structure and rigging, aircraft communications, aërology, aërial photography, aërial gunnery, aërial bombing, theory of flight, scouting, instruments, and radio.

After studying structure and rigging, the class is taken to the assembly plant where they must set up an entire plane, install the engine, and then align it so that it is in perfect balance. When this has been done it is given an inspection by experts and an instructor takes it out and flies it.

In radio, in addition to the theoretical side, one must be able to send and receive twenty words a minute as an operator.

It is important for an aviator to learn at least the rudiments of forecasting weather conditions. Therefore, aërology is taught and if one does not remember anything else he remembers that—

> Whether it rain, or whether it snow,
> We will have weather, whether or no.

In the theory of flight class one learns why an airplane, which is heavier-than-air, can be made to fly. Due to the shape and inclination of the wings, the air currents pass over them in such a manner that a partial vacuum is formed on the top surface of the wings. Curiously enough, the suction which this vacuum creates has more to do with keeping a plane in the air than the pressure of the air currents on the bottom surface.

All the subjects taught are of practical value to an aviator and, with the intense interest shown by the students, it is possible to maintain a very high standard of proficiency.

Examinations are given in every subject. It is sad to relate, but the elimination process comes into its own again at this point and always claims a few. The toll is not so great here, for everyone is interested and puts forth his best efforts.

Calisthenics as an Aid to Flying

During the first month, the authorities, just to emphasize the fact that an aviator must always keep in good physical condition and to show their kind, personal interest in you, make you report thirty minutes early each morning. This period is devoted to physical exercise. Even this is of practical value, for the drills, if properly executed, give one the same sensation as "stunting" in an airplane. At first you get extremely dizzy, but after a few weeks they can be done with comparatively little discomfort.

Would you like to know how it feels to spin down from five thousand feet? This will give you the sensation: Go to the center of the room; extend one arm in front of you and bend over until your finger is about six inches from the floor; point at some definite spot. Now, with your eyes concentrated on this spot and still pointing at it, start walking around it in a circle of three or four feet diameter. To get the right effect you must stay bent over and keep your eyes on the spot which you pick out. Go around it about eight or ten times to begin with. Then straighten up, or, in other words, "come out of your spin." No, do not hold your head and sit down. You must still fly your plane or it will "crash." Immediately after standing erect, and with your arm still extended, walk straight over to the door and definitely put your finger on the knob. There—now you can sit down and rest a moment before the next "stunt."

This time you are going to "loop-the-loop." Recently a French aviatrix "looped-the-loop" 212 times in succession. Later on you can try breaking her record, if you wish, but this time only make about six or eight loops. It's easy! Go in the bedroom and start rolling head-over-heels, just as fast as you can, out through the living-room to the kitchen. Then get up and repeat on the door knob.

What! You don't care to be an aviator if it feels that way? All right, but there are still several good "stunts" left. Anyway, after doing this every day for a month, you really do not mind it so much.

Your First Flight

At last the long-looked-for day has arrived! You are to start flying this morning. What makes you feel so queer? There is a sort of hollow feeling in the pit of your stomach and you seem to be all muscle-bound, and very self-conscious.

There is much talking and "kidding" going on at the beach, but you note that most of the laughter is forced and strained. The realization comes that everyone else is "keyed up" and feels about the same as you do. This, somehow, cheers you up a bit.

Together, with two or three other students, you are assigned to an instructor who takes you aside and explains just what he is going to do, what points you are to watch, and what he expects you to do.

It falls to your lot to go first and the instructor gives you the "gosport." This is a hard, leather helmet with ear-phones in it. To this is attached a long rubber tube through which the instructor can talk to you and explain things while in the air.

It is not until later that you realize the significance of this rubber tube. It is attached to your ear-phones and to the instructor's mouth. In other words, it only works one way, and, after you have made some especially brilliant display of the lack of brains, it is through this tube that the instructor relieves his mind in no uncertain terms.

After the instructor has flown for a time and made a few landings, you make your début. The plane, which until then has

acted very soberly, immediately seems to become possessed. First it tips to one side and then the other; then it begins bobbing up and down. The more you try to correct for this the worse it gets, until the instructor finally takes control. Immediately the plane feels its master's touch it becomes quiet again and goes along just as docile as an old grey mare and settles down on the water as gently as a setting hen on a nest of eggs.

The instructor then explains that, in order to fly smoothly, you must be very delicate on the controls. If you are too radical in your movements you will "over-control," or "over-correct," and the plane will never be steady.

You try to follow instructions, but the plane just simply will not go where you want it to and you are glad when you get back on *terra firma* again. Feeling that you have expended enough nervous energy to go through a presidential campaign, you are thunder-struck upon learning you have been gone only forty-five minutes.

When you think it over and realize that in ten hours you must be able to fly without the instructor even being in the plane with you, it seems as though it is of no use, that it simply can not be done.

You see, it is not a question of learning to fly eventually; one must learn in ten hours. After ten hours instruction a student is given a final check to determine whether or not he has the ability to fly alone. In cases of merit, a student is given three additional hours of instruction, but if he fails to pass the final check he may as well start packing the old suitcase, for his aviation days are over. The elimination process has claimed him for its own.

During the next few days you become a bit more accustomed to flying and begin to see the light. Then comes the day when the light fails and you seem to have forgotten everything previously learned. Your air work is very poor and your landings are atrocious. Your instructor tells you so—through the "gosport."

When the time arrives to take the final check for "solo," you become almost paralyzed and it is a wonder you have strength enough to get into the plane. On your first turn you go into a spin. The chief-instructor grabs the controls and straightens her out again.

"Settle down! Settle down! Is that the way to make a turn? Snap out of it!" (Through the "gosport.")

This sort of clears your brain and the realization comes that you must produce now or never. With a firm resolve to qualify or die in the attempt, you go at it again and finally manage to get by with it.

After your return to the beach he cautions you about certain things and says, "All right. Take her around alone now."

He says it casually enough, for he has, in all probability, forgotten the time when he made his first "hop." It means nothing to him, but the effect on you would have been about the same had he told you to walk across Niagara Falls on a tight wire. Wiping the moisture from your brow, you force yourself back in the plane.

THE MASTERY OF MIND OVER MATTER

With grim-set jaws you head the plane away from the beach and start on your first "solo." Every nerve is tense and every faculty alert!

In the midst of taking off a vision of the vaudeville artist, who was trying to disprove the theory that it is impossible to do more than one thing at a time, persists in coming up before you. This comedian was walking a slack wire. At the same time, he juggled three balls in one hand, while in the other, he balanced a cane. Another cane was balanced on his forehead and, just to show his versatility, he meanwhile, sang the "Sextette from Lucia." You feel as he looked—only more so.

With your left hand you work the throttle and regulate the speed of the motor. With your right hand you manipulate the controls which make it dive or climb and, also, those which make it roll on its side when turning. Not having any more hands left, the feet are used to work the rudder which makes the plane go right or left.

And with only one pair of eyes you must watch a hundred and two different things at once. Is your plane tipping sideways; is it climbing too steeply; is it going in a straight line; is anyone else flying near you, with whom you might collide? Also you must watch all the instruments. Is the propeller turning over rapidly enough; is the water temperature too high; have you sufficient oil pressure; how much altitude does the altimeter register; is your oil getting over-heated; are you making enough knots to stay in the air; is there enough air

pressure on the gas tank? Your brain must receive and co-ordinate all this information and immediately send out the proper orders to the different members of your body which are working for it.

Upon coming back to the beach, after having gotten around the bay in some unknown manner and having bounced the plane like a rubber ball upon trying to land, your classmates gather about and want to know if you were trying to play "leap-frog." You, however, are so elated over your first successful flight that nothing matters.

You walk back to lunch differently than you ever did before. You feel that you really amount to something in the world now. There is a firmness and determination in your step and possibly you swagger just a bit. You walk this way until after your first crash.

The next morning you have the pleasure of sitting on the beach and watching some of the others take their first "solo." After observing a few of them you feel that you didn't do so badly.

One of them has lost his nerve and is afraid to come down to make a landing. The instructors think it a good joke and discuss whether it would be better to take his lunch up to him or shoot him down. Neither is done, however, for he finally runs out of gasoline and is forced to land.

The days pass rapidly now. After each five hours "solo" one is given a "check-hop" and, in addition, is taught advanced flying. Of course, the elimination process gets in more deadly work at these points.

Stunt Flying

It is surprising to learn that part of the course consists of "stunt-flying." It was always your impression that this was reckless and only indulged in by people who wanted to show off. After you get to feel at home in your plane, however, there is nothing in aviation which gives you such a thrill and that feeling of abandon, as tumbling around in the sky. One feels just as he used to, on the old haystack back of the barn.

There are two reasons why it is necessary for a naval aviator to learn to do "stunts" in the air. One is, that he must become absolutely familiar with his plane, no matter in what position he finds himself; the other is, that if, while fighting an enemy plane, he finds himself in a dangerous position, he can either spin down out of danger or, by executing some other quick maneuver, gain the advantage.

One may have put his plane into a dozen spins when with his instructor and experienced no difficulty in bringing it out again, yet it takes all your will-power, the first time you are alone, to make yourself deliberately put it into a spin and fall towards the water. It's just like stepping off of the Woolworth Building with a parachute on your back. No doubt, the chute will open and keep you from messing up the sidewalk, but the first time you just naturally feel that something might go wrong with it.

Pride finally makes you do it, but in your intensity you have probably done something wrong, for the plane doesn't right itself as quickly as you think it should and during the next few seconds your frantic movements far surpass those of the proverbial "paper hanger." You move the controls in every possible direction and finally she rights herself. By the time you reach the beach you have forgotten what a mess you made of it and instead, pat yourself on the back and think you must be pretty good.

Pride Goeth Before a Fall

The next morning you get a bit careless on taking off and climb too steeply. When the plane gets about twenty feet off the water the motor stops without any warning and before you can straighten it out you have crashed on one wing. You are very much surprised, to say the least, and quite a bit shaken up, but have no serious injuries. The plane, however, has completely crumpled up, for it is only made of very light wood and fabric and it struck the water going almost fifty miles an hour.

As you climb out on the upper wing you see the sea-sled, with a twenty-foot spray behind her, coming towards you at top speed. It has arrived so quickly because it was waiting for just some such thing to happen.

There is a two-hundred foot tower on the beach where several people are always on watch during flying hours. Immediately upon the indication of a crash they sound the alarm. The sea-sled, which is at the foot of the tower, with her crew in readiness, shoves off immediately. Also, the ambulance comes down to the dock to be available in case there is any casualty. At the

same time the *Mary Ann* leaves her berth and, at the terrific speed of about five miles an hour, bears down upon the scene of action. The *Mary Ann* is the wrecking tug and it is her duty to bring in the pieces.

Aboard the sea-sled is a doctor with a pulmotor and first-aid equipment. He examines you very carefully and perhaps administers a "shot" of "cough medicine" better than any you have tasted since prohibition. A keen observer would note, as you step ashore, that your walk has changed. No, not the "cough medicine." It is only that you have lost your swagger.

With a sheepish grin you go up to the commandant and explain how it happened and are then sent down to the beach for another "hop," sadder, but wiser.

Experience has taught that if one rides in a plane immediately after being in a crash, he is not so apt to lose his nerve as if he waited a day or two and had time to think over what has occurred—another question of psychology.

Your period in the limelight, as being the first in the class to have an accident, is of short duration, for before the week is over there has been another, more spectacular than yours.

This student started to land towards the beach, but decided at the last moment he had better circle around once more. There was an error of judgment some place, for he failed to gain sufficient altitude to clear the hangar on the beach. Instead, he flew straight into the top of it—and stuck there. The nose of the plane pierced the side of the metal hangar, and there he sat with just himself and the tail of the plane sticking out. He was forced to sit there until a long ladder was found, then he gracefully climbed down and reported his return to the beach. Of course, the error of his ways was pointed out to him and he was told how extremely fortunate he was. In fact, he was informed that from then on he was living on "borrowed time."

The time passes very rapidly now. As soon as one has qualified in one type of plane he is given instruction in another type. In between, as opportunity affords, one fires his machine-gun practice, drops bombs, and takes pictures with an aërial camera and develops, prints, and joins them together into one complete landscape view.

Sometime during the course one has to practice night flying. Your instructor makes one short "hop" with you and then you do it by yourself. It is necessary to be very familiar with the plane when making a night-landing. There are two ways of doing it. One is to land near a light so that you can see its reflection on the water and thus judge the distance; the other is to keep the motor turning over just enough to maintain flying speed and to let the plane lose altitude very gradually until you touch the water. Then stop the motor and you have made a landing.

Before you know it the seaplane course is finished and you start in with land planes. Almost all planes fly the same once they are in the air, but each type of plane lands and takes off just a little differently from any other type, and one must bear in mind that a land plane should always be landed on the ground and a sea plane in the water. These facts have been forgotten at times and pilots have attempted the impossible.

After having qualified in land planes you do some cross-country flying and finish up by doing some "combat" flying. A "combat" plane fights other planes in the air. Almost anyone can learn to fly a plane in some fashion, but to do "combat" flying requires rare judgment and skill.

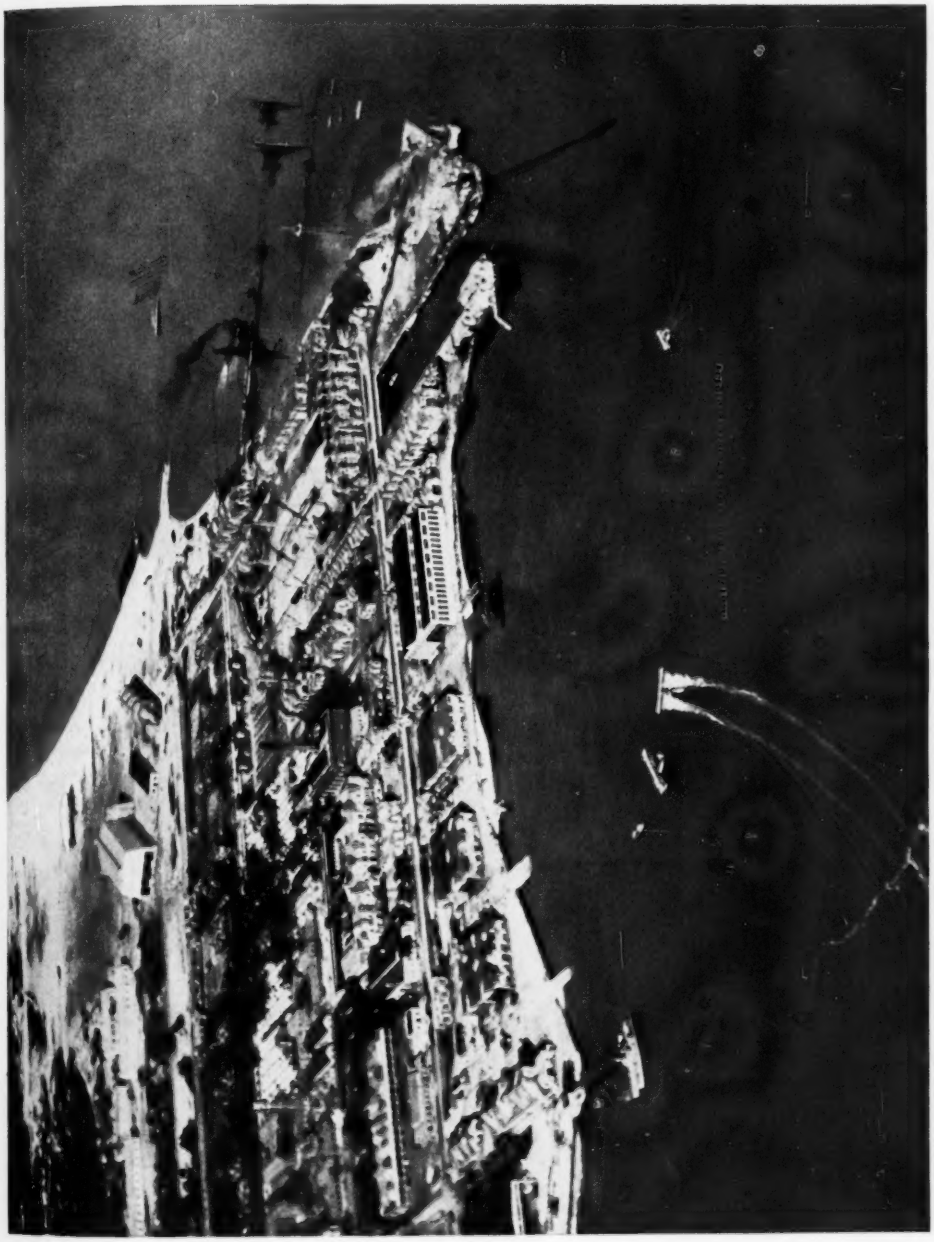
TO THE VICTOR

Do you realize that it is all over? That during the past eight months you have probably worked harder and learned more than during any other twelve months in your whole life? Also, do you realize that you have passed through all stages of the elimination process and have come out victorious and have the privilege of wearing a pair of gold wings on your left breast?

You are now a naval aviator and congratulations are in order.

And to what end has all this intensive training and elimination being going on? It is to make capable and efficient aviators; aviators who are not only capable of flying a plane, but who can go out into an active, operating squadron and take up their duties in it with some knowledge of the strenuous service requirements. Upon being detailed to active duty you will soon learn that your aviation training has but just begun.

Just a parting word of advice. Do not get reckless. If you must have fame, try to be the world's oldest *living* aviator. Remember—there are no poor aviators—eventually!



Bureau of Aeronautics, Navy Department

AIR VIEW OF NAVAL AIR STATION, PENSACOLA, FLORIDA
Note the effect of wartime camouflage.

Bureau of Aeronautics, Navy Department

THE "*MARY ANN*" BRINGING IN A DISABLED PLANE, PENSACOLA, FLORIDA

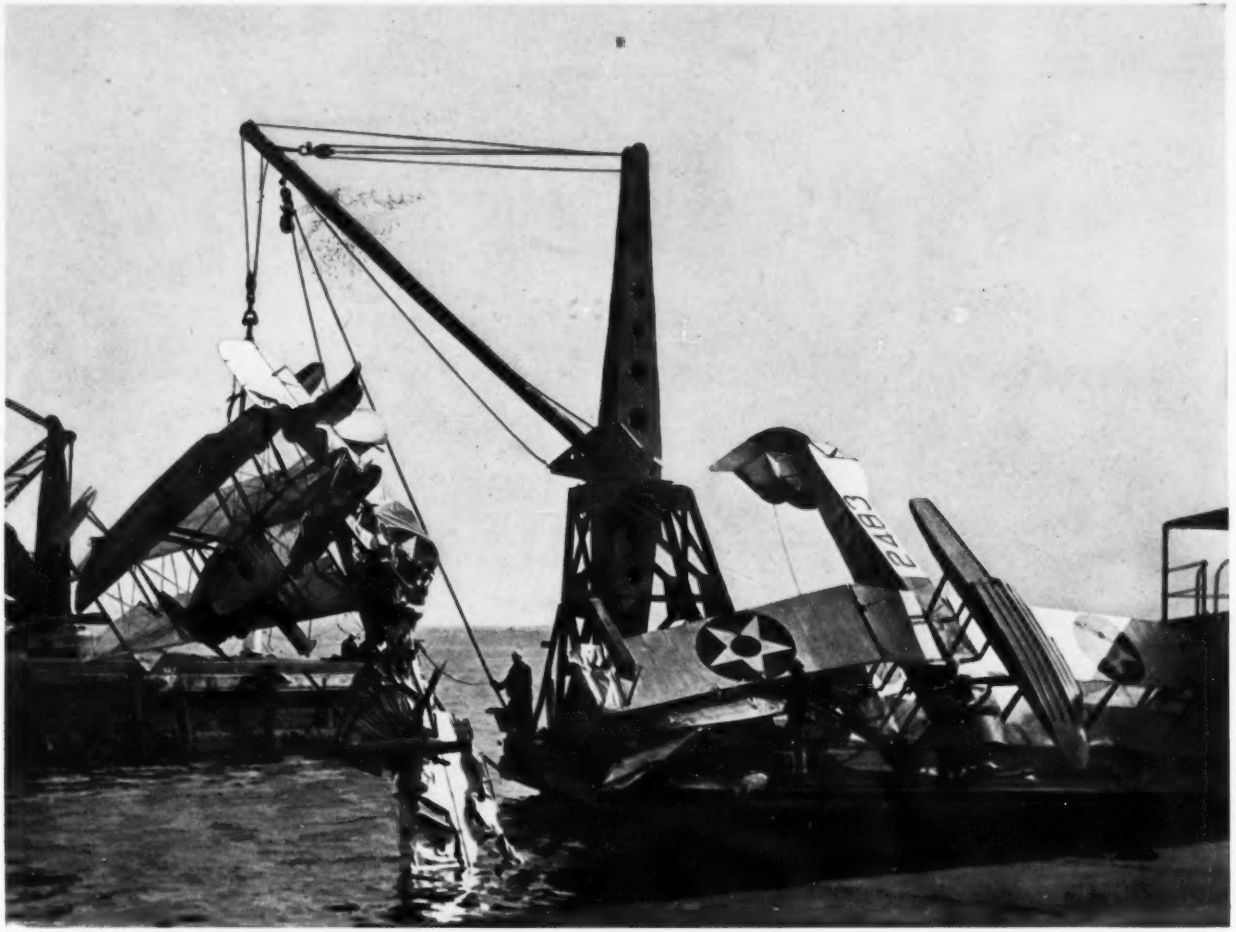
Bureau of Aeronautics, Navy Department

THE "MARY ANN" BRINGING IN A DISABLED PLANE, PENSACOLA, FLORIDA

Bureau of Aeronautics, Navy Department

A SEA-GOING AMBULANCE

The sea-sled to the rescue! Pensacola, Florida.



Bureau of Aeronautics, Navy Department

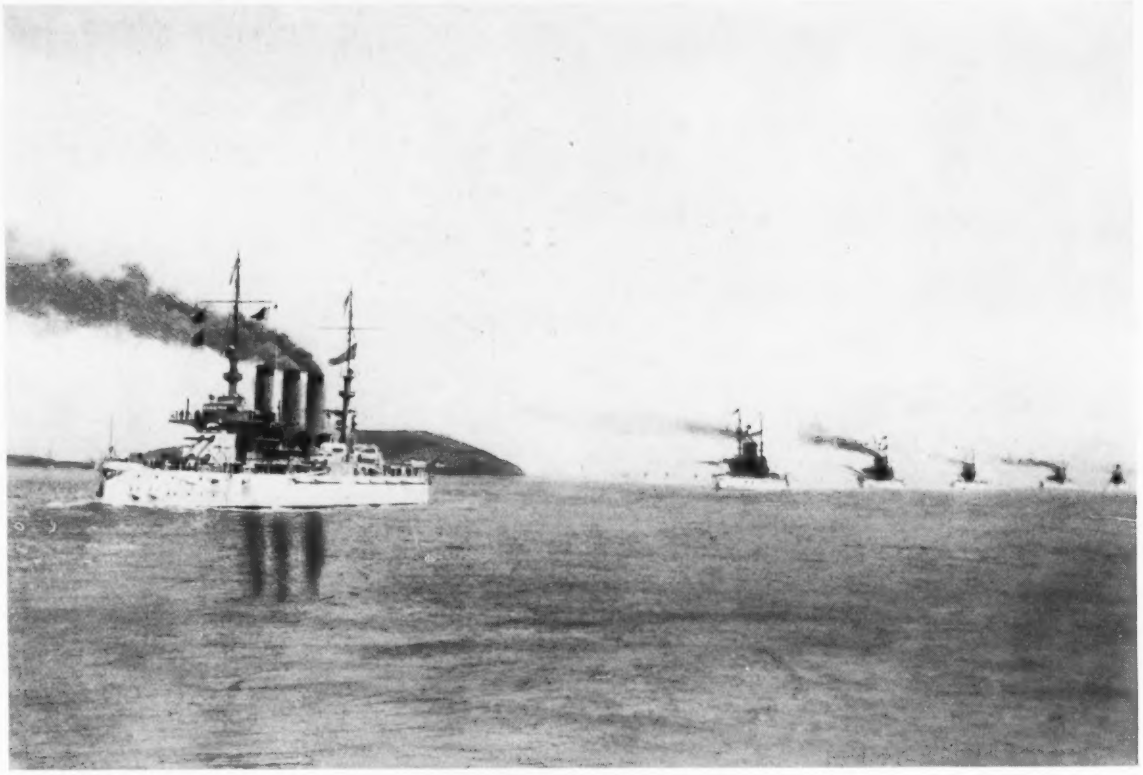
A BUSY DAY FOR THE "*MARY ANN*"
These planes collided in mid-air. Neither pilot was injured. Pensacola, Florida.

A BUSY DAY FOR THE "MARY ANN"
These planes collided in mid-air. Neither pilot was injured. Pensacola, Florida.
Bureau of Aeronautics, Navy Department

[Courtesy Mrs. G. E. T. Stevenson

REAR ADMIRAL CHARLES S. SPERRY (LEFT)

Admiral Sperry, who took over command of the battleship fleet at San Francisco on May 15, 1908, in conference with the commander, second squadron of battleships, Rear Admiral William H. Emory, U.S. Navy.



Courtesy Mrs. G. E. T. Stevenson

THE BATTLESHIPS ENTER PUGET SOUND WATERS, 1908

The fleet passed in review before various towns as it proceeded to Seattle.

Courtesy Mrs. G. E. T. Stevenson

"BEARS!"

At Seattle, in 1908, each ship was presented with a cub for a mascot. The cubs are shown parading past the reviewing stands.

Courtesy Seattle Chamber of Commerce

THE "OLYMPICS"

On the starboard hand, entering Puget Sound from the Pacific. The golf links in the foreground are many miles from the mountains.

Courtesy Seattle Chamber of Commerce

THE "OLYMPICS"

On the starboard hand, entering Puget Sound from the Pacific. The golf links in the foreground are many miles from the mountains.

Air Service, U. S. Army

SEATTLE, WASHINGTON, WITH LAKE WASHINGTON IN THE BACKGROUND

Seattle has a large overseas trade with Alaska and the Orient.

Courtesy Seattle Chamber of Commerce

THE FLEET AT SEATTLE (MODERN VIEW)

Some of the ships of the Battle Fleet berthed in the lower end of Seattle's harbor, which is five miles from tip to tip. The passenger liner at the left is the *H. F. Alexander*, at one time flagship of the U.S. Fleet.

Courtesy Seattle Chamber of Commerce

THE FLEET AT SEATTLE (MODERN VIEW)

Some of the ships of the Battle Fleet berthed in the lower end of Seattle's harbor, which is five miles from tip to tip. The passenger liner at the left is the *H. F. Alexander*, at one time flagship of the U.S. Fleet.

Courtesy Ranier Park Company

MT. RANIER

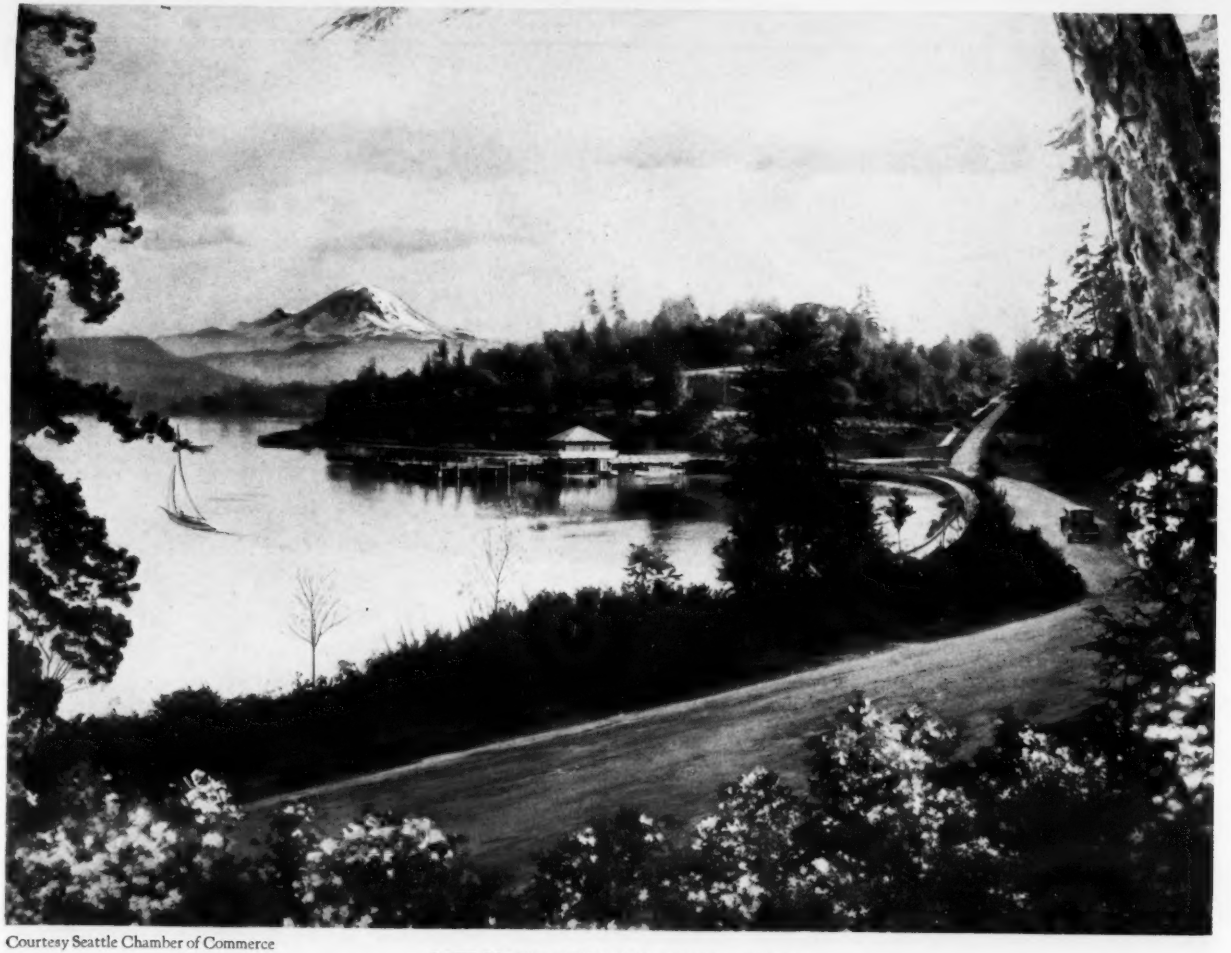
A most beautiful sight on coming up Puget Sound. With the pink glow of the setting sun lighting it up, it looks like a giant dish of ice cream.

Courtesy Seattle Chamber of Commerce

SEATTLE, WASHINGTON
Largest city in the Pacific Northwest.

Courtesy Seattle Chamber of Commerce

SEATTLE, WASHINGTON
Largest city in the Pacific Northwest.



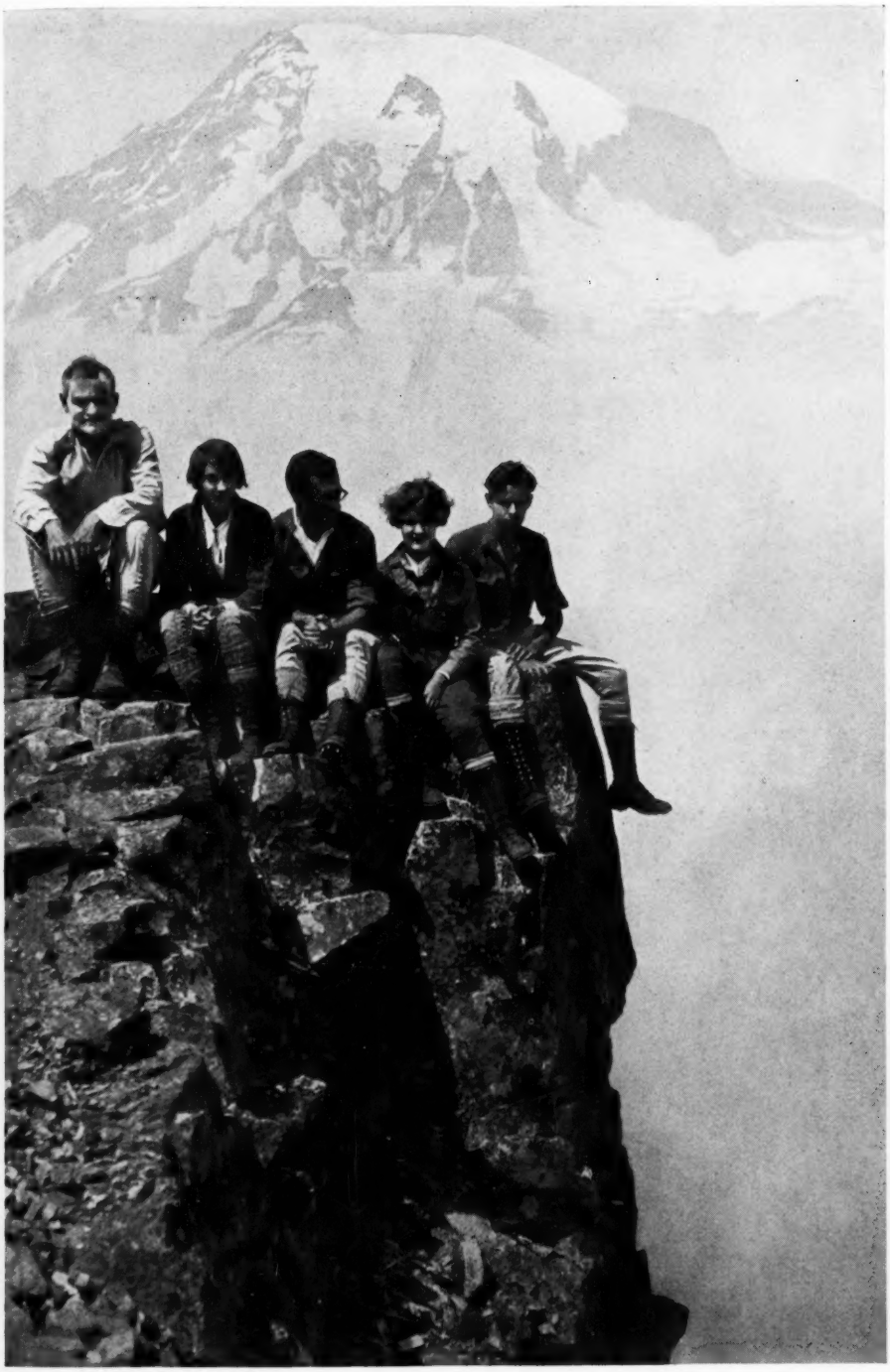
Courtesy Seattle Chamber of Commerce

LAKE WASHINGTON BOULEVARD, SEATTLE
Mt. Ranier in the distance.

Courtesy Seattle Chamber of Commerce

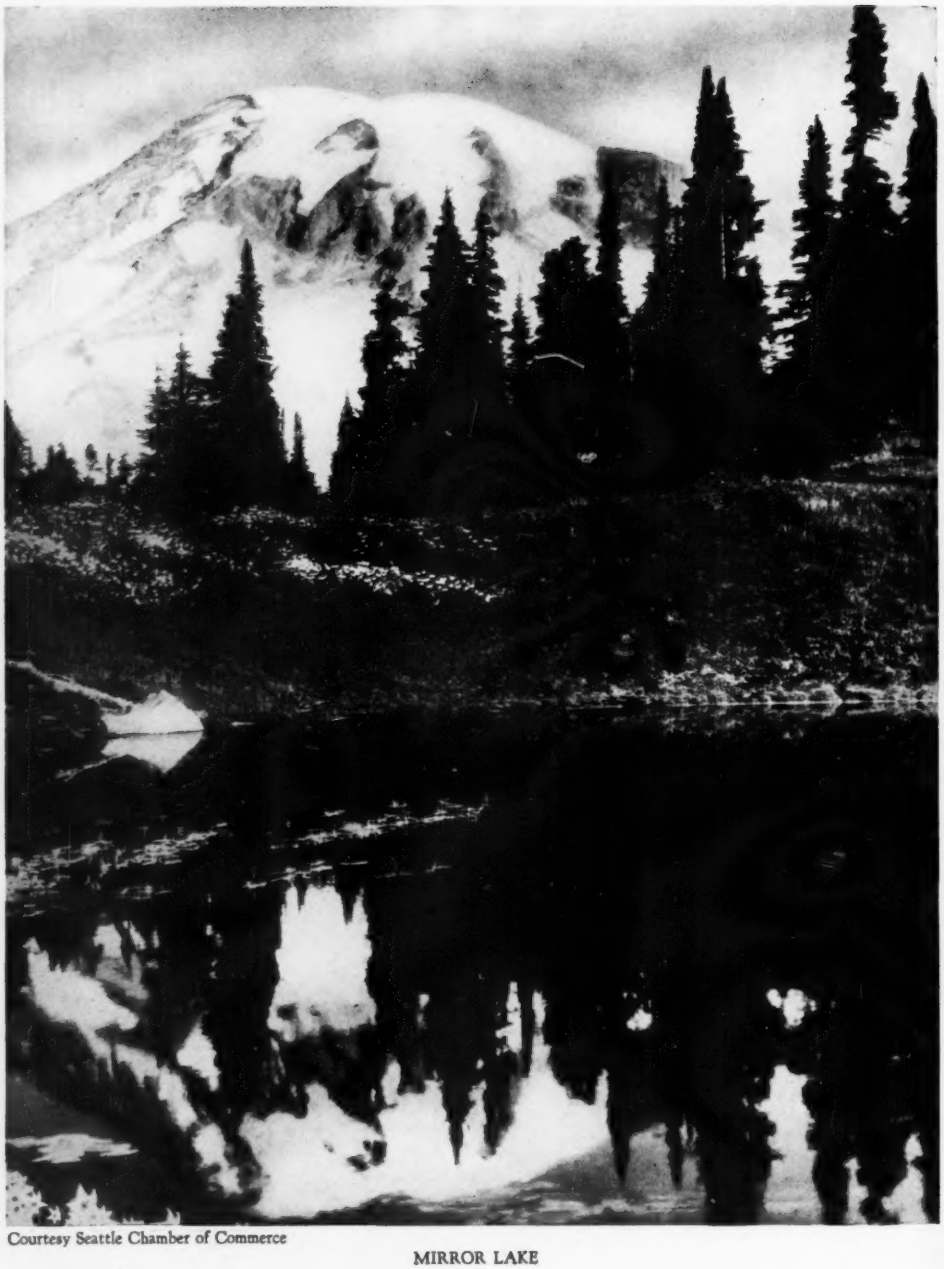
EDITH CREEK AND MYRTLE FALLS, RANIER NATIONAL PARK

Mt. Ranier in the background.



Courtesy Seattle Chamber of Commerce

PINNACLE PEAK, RANIER NATIONAL PARK



Courtesy Seattle Chamber of Commerce

MIRROR LAKE

The Psychology *of* Pacifism

By K. L. Buell

IN ONE sense we are all pacifists. "Everybody hates war. Everyone longs to make it impossible."[1] The day has gone when war was looked upon as a phenomenon of nature, a holy necessity, the only occupation for a gentleman, or even as a useful device for preserving the morale of nations or reducing the surplus population. All these things, we now believe, may be accomplished in ways less destructive of human happiness and human values. War is an evil, inevitable perhaps, but nevertheless an evil, and is so considered by everyone. It is one of the few things upon which the people of the United States, and of every other nation not under the influence of deliberate militaristic propaganda, agree by common consent. It would be very difficult to find a man in the modern world who would be willing to say that he believes in war for its own sake and would like to see it continued as a permanent institution of mankind. Such men may exist but they are so rare as to be almost invisible.

Opinions differ, to be sure, as to the relative evil of war as compared with some of the other ills that afflict mankind. It is recognized that war may be the alternative to something worse, slavery to an alien culture, for instance, or slow attrition, or national decadence. And many recognize that from the worst war some good does come. The informed know that, in the world as it is now constituted, war is practically inevitable in some places and at certain times and that it should be foreseen. And opinions vary widely as to the causes of war and the best methods for its prevention. But that war can and must be eliminated eventually from human affairs is an idea that is universally held. In that sense we are all pacifists.

But the kind of pacifism to be discussed here is not the reasoned conviction that war is, taking it in all its aspects, more evil than good, nor the hope that is held by all kindly men that the suffering caused by war may eventually be abolished. It is not even the conviction of many thoughtful people that we could do more to prevent wars than we now do, if we would give the subject more diligent and careful thought. No, the pacifism that is a stumbling block in the path of all those who have the welfare of the nation and of humanity at heart and who wish to deal with evils, when they exist, wisely and sanely, is not of this reasoned kind. It is an emotional attitude, a kind of cult, a sentiment, that is quite unreasonable and utterly unable to approach the most obvious facts with an open mind. It is the attitude that regards the soldier, especially the professional soldier, as, in some mysterious way, a wicked person. It is the attitude that holds that all who speak of war as a possibility, to say nothing of an inevitability, are militarists, seeking their own advancement, or bloodthirsty persons lacking in the human virtues of kindliness and pity. It is the attitude that would have us disarm immediately, without regard to conditions in the rest of the world, and to rest, helpless, on the hope that our example would be followed by all mankind. It is the attitude that wants peace at any price and that is always in opposition to any increase in the military establishment or any adequate financial provision for the Army and Navy, regardless of the need or the facts. It is, in short, pacifism as an emotional attitude, rather than as a reasoned conviction, that we are about to consider here.

It is always a temptation, in discussing such a question, to fall into the error of trying to minimize or oversimplify the facts. It would be very pleasant to come to the conclusion that, after all, pacifism is not a phenomenon of any great importance, that it is merely the form in which certain overemotional people rationalize their feelings

[1] Henry Cabot Lodge, Speech in the Senate, February 28, 1919.

of pity and fear and that it is, therefore, a private, rather than a public, question. But that, alas, is not the fact. Pacifism is a political issue of some real importance. It is easy to exaggerate that importance, but it does exist, and makes itself felt when appropriations for military purposes are to be considered. No politician dares ignore the pacifist sentiment of an unreasoning kind among his constituents. He is put to shifts and subterfuges to camouflage the most reasonable measure for national defense and must invent pretty phrases as a sop to those voters who are opposed to the use of the military for any purpose whatsoever. Legislative bodies are constantly harassed by demands that various panaceas for the prevention of wars that are not imminent be considered in season and out and adequate preparation for war when it is imminent has become almost impossible. So that the study of pacifism is not one of interest merely to psychiatrists and sociologists but is a political problem as well.

It would be pleasant to ascribe pacifism to some one single source and to show that it could be cured by eliminating that source. If pacifism were the work of some one group, or cult, with offices and a propaganda, it could be reached and eliminated. If it were merely the work of foreign propaganda, taken alone, that too could be remedied. But, like many another widespread sentiment, or emotional attitude, it has many sources and to understand it one must understand them all. It is worse than useless to attack one cause out of many. To do so is to confirm the believer who does not happen to be under the influence of that particular cause, in the idea that those who are trying to disillusion him are wrong in everything they say. It is necessary to analyze this sentiment, to break it up into its component parts, and to discuss them separately.

One error can be dismissed at once, before going on to the real causes of pacifism. That is that pacifists are cowards, persons who selfishly desire a disgraceful peace because they fear the effects of war upon themselves or their possessions. This is the easy, unthinking explanation that is brought forward, especially in wartime, to explain the slacker and the pacifist. There may be a fringe of cowardly people along the edges of pacifism who hold their views from selfish motives. But real cowardice is not very common, and is not apt to court opprobrium, which is a certain evil, to avoid a danger that is not immediate and self-evident. The truly cowardly man, who is afraid to fight, or the woman who selfishly wishes to save her own men at the expense of others, is much more apt to intrigue for a position that will permit of strutting about in a uniform without any real risk, or, in peace time, to cover the hidden weakness with bluster and a jingoism that outdoes the most confirmed believer in the inevitability of war. No, pacifism is more real and more respectable than a mere desire to rationalize and conceal cowardice. It has its roots in causes more complicated than that.

The main influences at work on the public mind that lead in the direction of an emotional, unreasoning pacifism, an opposition to war, as such, regardless of the circumstances or the necessity, a dislike for all things military, regardless of justice or good taste, the main causes of that sort of pacifism are religion, feminism, sentimentality, radicalism and foreign propaganda, roughly in that order of importance.

Now, of course, it is impossible to divide and classify a widespread, generalized sentiment like pacifism into neat little compartments and to say that this person is under one influence and that group is being carried along solely by some other influence. All these various elements act and interact on each other. Any one individual or group may be influenced by several. But to accuse a man of listening to socialistic dogma, when, as a matter of fact, what he may have in mind is the Sermon on the Mount, is a serious error. Such errors do not help the cause of education, they hinder it. So, for the purpose of clarity, we will consider each of these influences separately, bearing in mind that they are not mutually exclusive and that we are considering them entirely from the point of view of pacifism, as previously defined, and not trying to make a general study of the psychology of mankind.

Religion lies at the root of much that goes on in any field of thought. Whether or not religion is a natural instinct of man, necessary to his development and happiness, may be left to the theologians and other specialists. But that religion has played a major part in moulding the thought and attitudes of the modern world is undeniable.

Much that we take for granted, much that seems like the natural reaction of the human mind to circumstance, is really nothing but the unconscious application of the religious teaching of the past. And this is as true of those who consider themselves free and advanced thinkers as of those who go to church on Sunday morning. Those dogmas and teachings that have been held before a whole civilization for nearly two thousand years are firmly planted in the public mind. It is not necessary to seek further in order to explain them. Their presence is fully accounted for by the fact that they are a part of organized religion. These dogmas are many, they are powerful and they are always with us. "Peace on Earth" is one of them.

Anyone, therefore, who begins an argument, or starts to preach a cause, no matter how silly or dangerous it may be in itself, gets a hearing and strikes a responsive chord at once by stating that it is his object to forward the day when there shall be universal peace. Even militaristic autocrats know this and act, or rather talk, accordingly, with their tongues in their cheeks. Any argument against pacifism that starts with the assumption that war is inevitable and that we must be ready to meet it when it comes, unless very carefully qualified and led up to, will meet with an immediate emotional opposition. Peace is one of the ideals of Christianity and it is considered, by a large part of the population, not merely stupid but wicked to believe that peace is unattainable. In this country we are accustomed to trying for the unattainable. And often we get it. We have already accomplished so many things that have always been considered impossible, frequently under the impetus of religious zeal, that it is difficult to persuade the American that he must wait and pray for the regeneration of all mankind. He wants to do something about it at once, take active steps, bustle, organize, work. If peace is a holy cause, let us be up and doing. Hence all the committees and organizations and panaceas for the immediate abolition of war. And there is nothing with which to combat this enthusiasm, rooted, as it is, in religious emotion, but the facts. And the religious mind is inclined, for reasons that we need not go into here, to minimize, to distort, to ignore, the facts.

It must not be understood that we are here advocating that persons zealous for the public welfare should be discouraged in their efforts to bring about eventual peace. They are doing their country a harm only when they carry their enthusiasm to the point where they shut their eyes to the real world conditions. The whole history of Christianity has been the story of conflict and compromise between lofty ideals and the facts of human life and human nature. The great historic effort of the Church in the Middle Ages to replace the *Pax Romana,* based on force, with a universal brotherhood, based on loyalty to the church, failed. But the attitudes and emotions engendered by that effort are still with us. They have indeed grown, until now the ideal of the devout is not merely peace and brotherhood among the Christian communities but peace and brotherhood among all men, everywhere, regardless of creed. And there is nothing with which to oppose this beautiful aspiration except the sad fact that the world, as a whole, does not, as yet, agree with it. Universal peace, brought about through the regeneration of all mankind, is the ideal. The fact is that mankind, after nearly two thousand years of Christianity, still remains largely unregenerate. The religious must, therefore, continue to strive, as they have striven in the past, to redeem the human soul, rather than to lay political and military plans based on the assumption that mankind is already redeemed.

The practical difficulty encountered in an effort to present these facts, and the need for defense, to the religious community is caused, largely, by one of the weaknesses of our present civilization. There is a strong tendency, in an overspecialized age, for the various professions to live and work in airtight compartments, knowing little and caring less as to what the other professions are doing and thinking. There is a tendency for the leaders in one profession to appeal to the laity in another profession, direct, without taking account of the leadership in that particular field. This is, of course, very bad. It is the game that the Bolsheviki play when they try to disaffect the men in the ranks against their officers. If much extreme pacifism is coming from the religious and devout, as seems to be the case, it is to the clergy that the facts should be presented and the appeal made.

But it must be done with tact. It should always be remembered that the pacifist

clergyman may actually be, not less, but more patriotic than the average man. He identifies himself with his country and his country with himself so thoroughly that when he asks that our national interests be sacrificed in the hope of peace he is really offering himself as a sacrifice on the altar of his God. It is useless to talk to him about enlightened self interest, or to accuse him of sedition, or to ridicule his aspirations. He must be led to understand that, in jeopardizing the safety of the most pacific nation in the world we are endangering, not helping, the cause of ultimate universal brotherhood. He should be shown something of the way the world looks to the soldier, without minimizing the importance of his own ideals, nor misunderstanding the way the world looks to him.

Much the same technique is needed also in the world of the newly emancipated and newly enfranchised woman. There is much militant pacifism, if such a contradiction in terms is permissible, among organizations of women, and the sentiment is not so much one that is held by the rank and file as one that is stimulated by the leaders. In order to understand why that is so it is necessary to see the world as nearly as possible from the point of view of the leaders of what is often termed feminism. Women will eventually take their new responsibilities for granted. They will organize in such a way that the women who best represent the rank and file will be in positions of power. But, for the time being, the active leaders among women are still more or less of the crusader type. They are the same types, and often the same individuals, who lead the campaign for women's rights, meaning the right to hold property, the right to acquire an education, the right to vote, and the right to earn a living outside the home under conditions of reasonable equality with masculine competitors.

Whether or not the emancipation of women is a good thing is beside the point. Whether or not women, and mankind generally, were better off under the old dispensation is a subject that need not be discussed in connection with pacifism. Certainly there are many unsolved problems confronting women in this new world that they have created for themselves. No one recognizes this more clearly than the feminist leaders. But to raise that point when trying to deal with the specific problem of pacifism is to create unnecessary opposition. Yet it is not at all unusual to hear, both on the platform and in private conversation, a speech something like this,

"Ladies, God bless you! We honor you as women. We revere you as wives and mothers. But we think you should stay in the home and keep out of public affairs. You are all wrong in practically everything that you are trying to do. You are wrong in this and you are wrong in that and you are wrong in your whole ambition to interfere in politics. But today we shall explain to you only one of the many points on which you are sadly mistaken, namely pacifism."

Of course, this is a caricature of what is actually said, but it gives the general trend of the approach often made in dealing with women. And it is worse than useless. It is a platitude that if you wish to convert a hearer on one specific point you should concede or ignore all other controversial points. And it is nonsense to tell a woman who has devoted her life to a cause that her cause is silly and harmful and then to expect a sympathetic hearing.

The feminist has a reason for feeling as she does about war and the military. For centuries, the fact of war has been used as the clinching argument for keeping women in a subordinate place in the body politic. And, in time of war, women are automatically pushed back into a passive and more or less helpless position. It is human nature to like to hold power and prestige, to be needed, to be important. And feminists have made of this desire a kind of cult. It is easy to see, therefore, why the very thought of war and preparation for war produces an adverse emotional reaction in feminist leaders. It is useless to tell a woman who is not a wife and mother, and never expects to be one, but who nevertheless may sway the votes of a large woman's club, that she can serve her country by sacrificing her dear ones. She wants to serve her country in person. And, if war is to thrust her into a position of relative unimportance, she will have an unreasoning and illogical opposition to everything military.

The answer to the problem of pacifism in feminist circles is thus indicated. If women can feel that their help is needed in national defense, that they too may share, if not the risk, at least the work and the glory, much of the instinctive reaction to the thought of war and military affairs will dis-

appear. In time of war, women should be given as much responsibility and as much credit for their work as possible. They should be enlisted for service in noncombatant activities and allowed to wear uniforms and to hold rank wherever their abilities justify it, even though, from a strictly military point of view, that is not necessary. This was done, to some extent, in the last war and, because it was done, there is less pacifism today in feminist circles than there otherwise would be.

And, in time of peace, the coöperation of the more advanced feminist leaders should be sought. Patriotic work is now left, to a large extent, to the most conservative women of the community, many of whom may even have a record of antisuffrage and antifeminist activity. Without in any way minimizing the splendid work that such women are doing for their country, it ought to be possible to enlist the support of a still larger group. To make a specific suggestion, would it not be possible, when a battleship is to be christened, or a monument unveiled, or where, in any ceremony, womanhood is to be represented by some one individual woman, to choose one who is a leader in her own right, the head of some large organization of women? One of the subjects upon which feeling is running high among able women, who control the opinions and votes of others, is the tendency of men to use their age-old power to force women, who may or may not have any claim to recognition through their own abilities, into positions of prominence merely because they are the wives, daughters, or sisters of prominent men.

We are all incurably human and the reason for form and ceremony is, after all, for the emotional effect. It is not good strategy to ignore the new alignment of power and prestige among women and then to complain of pacifism in feminist circles. Feminists hate to believe that the safety of the country is in the hands of a profession that is opposed to the advancement of women. Hence their advocacy of moral influence as a substitute for force. And hence the necessity for using the same tact and tolerance in dealing with organized women that would be used in appealing to any other large group, keeping to the point at issue, and refraining, both in word and deed, from entering into arguments that have a high emotional content and have nothing to do, really, with the question of national defense.

Often closely allied with the religious and the feminist, is another population group that we here class as sentimentalists. A sentimentalist is a person in whom one emotion has grown to such proportions that it has ceased to become a virtue and has become a vice, upsetting the whole mental outlook of the person so afflicted. This may happen in the case of any one of the more important emotions. There are, therefore, many kinds of sentimentalists. But the emotion that is under consideration here, because it leads to unreasoning pacifism, is that of pity. There are a great many persons who have the sense of pity so overdeveloped that they are incapable of a sane and reasoned outlook on life and are subject to emotional vagaries, even in such fields as that of public affairs.

Every emotion has its use, is present in the human soul for a reason that is deep rooted in the evolution of the race, and has a purpose to perform in the life of the individual. It is only when one of the major emotions breaks all bounds and becomes greatly exaggerated, that it becomes harmful. But there is no emotion, however laudable in itself, that may not become a menace, if unduly expanded. The Greeks recognized, long ago, that pity and fear were the two emotions most likely to run amuck and spoil the clarity of the human mind. Both are useful in their places, of course. Fear is the instinct that warns the individual of danger and protects him from destruction. Pity is the instinct that causes the adult to desire to protect that which is weak and helpless and thus insures the survival of the young. Both are powerful, primary emotions and both are peculiarly subject to overdevelopment.

In the case of fear, this tendency has been clearly demonstrated by modern psychology. Even in persons who act with apparent courage, hidden and suppressed fears are now known to be the cause of much that goes wrong in the mind, to be the underlying cause of many undesirable traits of character. Pity, on the contrary, has not been so carefully studied. Psychology has yet to reveal the harmful effects of the emotion of pity in its exaggerated forms. This neglect is probably due to the current belief that pity is so desirable a trait that it cannot be overdeveloped. All modern educa-

tion and ethical teaching tends to increase the emotion of pity as far as possible, with disastrous results in certain temperaments.

We have, in the modern community, a large, and increasing, group, many of whom are women, though by no means all, so stimulated in this one respect that they are incapable of effective work or sane thought. They are sorry for themselves. They worry over the wrongs of the world. They read cruelty into the most necessary act of social surgery. They are continually rushing to the defense of the most unworthy persons and causes through a desire to be on the side of the under dog. They shrink from the idea of force and vigor in any form, not because they fear for themselves, but because anyone who deals firmly and unemotionally with the affairs of the world seems to them hard and merciless. It is a pathological emotional state.

Such people tend, as a matter of course, to pacifism. The very idea of war and of force is so abhorrent that the mere precaution against war seems to them a crime. It is useless to reason with them. They are not capable of reason on anything which involves, or can involve, the idea of human suffering. And they cannot be cured *en masse*. They can only be cured individually, with the aid of the psychiatrist, or eventually, through a saner attitude toward the education of the young. The only immediate thing that can be done to meet this weight of sentimentalism, when it interferes seriously with the proper conduct of some function of government, is to divert it into less harmful channels.

It does little good to stress the educational, economic, or other peacetime value of the Army and Navy, still less to point to the need for defense. To the sentimentalist of this type the, to him, glaring fact that the business of a soldier is to kill, when need be, outweighs everything else. The only thing that can be done is to draw the attention of such people to objects of pity other than the victims of war. It would be a very good thing, for instance, if it could be arranged, to have the Army and Navy take over the functions of the Red Cross and be the ones to rush to the rescue in times of national disaster. The victims of flood, fire, tornado, famine, and pestilence are pitiful objects, appealing to the sentimentalist. It would have a very salutary effect on appropriations if the military could appear as angels of mercy wherever human suffering occurs in its cruder and more dramatic forms. Those persons burdened with an excess of pity would then be led to associate the military with the relief of suffering from real and immediate disaster and would think less about the possible suffering of the poor enemy in a problematical war. Emotional and unreasonable attitudes can be cured only by picturesque means.

Quite different in temperament from the group that suffers from an excess of pity is another psychological division of the public with whom it is more difficult to deal. Much that is annoying and puzzling in modern life, and that causes distress and difficulties to those who are trying to keep the ship of state afloat and effective, is laid at the door of a rather hazily defined group, or school of thought, usually designated as radical. It is a word that is not well defined. To the very conservative man everyone is a radical who desires change or progress. To others all persons who espouse "isms" of any kind are radicals, and the group is alleged to include such wide variations as communism, anarchism, and vegetarianism. And it not infrequently happens that some man who has made a real step forward in science or government is branded as a radical by those who hate anything that is new. The only way to discover just what this group is, just what they are doing, is to study various individuals who call themselves radicals and to find out what they have in common.

A radical is a man who has a temperament, or emotional makeup, that causes him to prefer destruction to conservation, who is more interested in destroying that which is old, or outworn, or merely distasteful, in things, in ideas, in institutions, than in finding and helping to build a new thing, or idea, or institution to take its place. He is exactly like the little boy who throws stones at a window and shrieks with delight when the irate householder rushes out, shaking his fist. The more powerful, sedate, and earnest are the people who defend a given institution, the more delight does the radical take in throwing stones at it. In the lower walks of life, among the crude and ignorant, the radical throws actual stones, or monkey wrenches. It is not accident that it is so often a radical that is found committing sabotage. It is his temperament. He enjoys it. And in the upper walks of

life the radical throws epithets, arguments, and theories at established institutions and traditions for the sole purpose of causing serious and responsible persons to become excited and to make angry replies. He is not really interested in the welfare of the people and the progress of mankind. To take such an interest would be to make him a serious and responsible person in his turn. When this happens to the individual radical he ceases to be a radical. Just why life should present such an aspect to certain characters is beyond the scope of this article. But such is the case.

There is little that can be done toward persuading radicals to drop their pacifist doctrines. They are not really pacifists at all. Quite the contrary. They delight in confusion and excitement. They are not at all averse to mobs. They are against the Army and Navy because these are established institutions, powerful, important, and revered. To point out that the military establishment is for the purpose of protecting the public safety and insuring the orderly development of national life does no good. They are not much interested in safety and the idea of law and order leaves them quite cold. In time of immediate national danger most radicals drop their pacifism and do their bit as enthusiastically as the most convinced patriot. But they have not much political imagination. In times of peace they take an impish delight in making fun of patriotism and causing responsible persons to grow purple with rage. They have not sufficient public spirit to fear that they may be doing harm. They are enjoying themselves. And no one likes to be told that his pet diversion is socially injurious. So, like others whose pleasures have been taken away in the supposed interest of the public welfare, they look upon themselves as unjustly persecuted if told to conform to majority opinion and consider the common good.

In a discussion of pacifism, however, radicalism is not a factor of the first importance. The position of influence and power held by the radical in the community differs with the times in which he lives. In times of social ferment, when tottering old institutions are standing in the way of progress, the radical is a valuable asset. He comes to the top in revolutionary periods, as in France of 140 years ago or Russia of our own time. His services as a wrecker are in demand. He becomes a leader and a popular hero. In times of profound stability and constructive effort the radical all but disappears. He takes up dress and food fads and queer religions and is looked upon as a crank. Today there is much ferment in intellectual circles. Many traditional ways of thinking on such subjects as morality and religion are under review. Therefore the radical is important and a force to be reckoned with in certain fields, notably education. He has his uses there. But the people as a whole are not in a state of unrest. So that the radical as a political factor is almost negligible. He is not interested in party politics, he does not organize, and he seldom even takes the trouble to vote. Occasionally some radical publishes a statement on some subject of public interest that is false, or that gives a false impression. If such a statement is given wide circulation it should be answered by responsible persons who are in a position to know the facts. And physical violence can be suppressed. But, aside from that, the best thing to do with radicalism is to ignore it, while it remains radicalism and nothing else. It is not until foreign propaganda makes use of an individual radical, by enlisting his skill for destructive criticism, that he becomes dangerous. And then he can best be dealt with as a foreign agent rather than as a radical. Any other course lays us open to the charge of trying to suppress free speech.

Religion, feminism, radicalism, and an overdeveloped sense of pity are, then, a few of the more important attitudes and sentiments underlying pacifism. To understand the power of this particular dogma it is necessary to understand these prejudices and others like them. To attack pacifism as though it were a simple, independent phenomenon is to underestimate the task and to make errors in the technique. And to lay pacifism entirely to the machinations of subversive propaganda is to mistake the immediate and proximate cause for the ultimate cause. For propaganda never works in a vacuum. It is essentially an appeal to the emotions, to the sentiments, to the prejudices, rather than to reason. If the sentiments and the prejudices are not there the propaganda will not work. Reason is the inveterate enemy of propaganda. When people can be induced to use reason, propaganda is useless and harmless. So well is this understood, by those skilled in the art,

that Russia has fallen into the habit of throwing the whole force of its propaganda behind any half-baked philosopher, or groping scientist, who claims to have discovered something or other that upsets the laws of thought and logic. "Does the Russian program sound illogical. Permit us to introduce Professor So and So who says that logic is the bunk." But people will not always use reason. They often persist in thinking with their emotions, in spite of admonition and precept. In order to combat any one kind of propaganda, therefore, it is necessary to realize the sentiments, the emotions, to which it is appealing and to proceed accordingly.

It is needless to point out in this article that there are large and powerful interests in the contemporary world, highly skilled in all the arts of intrigue, to whom it is of supreme importance that the military establishment of the United States shall be as small as possible. To suppose that such interests are not working to promote pacifism in this country would be to stick our heads in the sand like the ostrich of song and story. On the other hand, it is not necessary to get unduly excited and to fear that the country is going to the dogs because this foreign propaganda seems to make so many converts. It is all in the way it is done. The whole secret of successful propaganda is to give a concrete plan, a rallying cry, a practical program, to those whose vague aspirations have hitherto been scorned or ignored, to put into form for a purpose, the sentiments and prejudices that have before been inarticulate. If this is done by the wrong people, with the wrong aims, trouble will result. If it is not done by the right people, the wrong people will do it. Such is the world in which we live.

The way to combat pacifism, therefore, is not to concentrate exclusively on foreign propaganda, still less is it to assume that all who hold such views are lacking in brains or in patriotism. The thing to do is to study each individual, or each group, who is preaching pacifism and to determine what are the underlying emotional causes of his attitude. When these have been determined, and sympathetically understood, it may prove a quite simple matter to show him, or them, that the best way to promote the cause of peace on earth, of the advancement of women, of free speech, and of pity for suffering humanity is to make sure that, whatever happens in a turbulent world, the United States of America, at least, shall pursue these causes, undisturbed and safe, under the protection of the Navy.

Peter *the* Great—A Pirate *of* Tortuga

By COMMANDER WILLIS W. BRADLEY, JR., *U. S. Navy*

He had a heart to resolve, a head to contrive, and a hand to execute. *Gibbon.*

NEARLY TWO hundred and fifty years ago, a bronzed and bearded man, tall and broad-shouldered, walked the unpaved and crooked lanes of the pirate settlement on Tortuga, that little island just off the northwestern coast of Haiti.

Pierre, for that was the pedestrian's name, had lately arrived from Dieppe in Normandy and had come to the new world for the single purpose of making his fortune by taking whatever he could of other people's property. He was a tremendous man, and was soon known to his contemporaries by the name of Pierre le Grand, or in English, Peter the Great.

Fortune failed to smile on Peter, and he went through many anxious months and years of waiting for something profitable to turn up. Finally, with that spirit of adventure which has been the foundation stone of so many auspicious careers, he determined to go and seek the success which would not search him out in his island home. He accordingly recruited twenty-eight venturesome men, obtained a small open sailboat, and set out over the tropical seas to find the treasure ship of his dreams.

For many days they sailed hither and yon over the blue waters of the Atlantic without encountering a vessel of any description. When they were far from the friendly haven of Tortuga, their food and water became so reduced that the shades of hunger and discontent quickly drove the spirit of hopefulness out of their fragile craft. Day by day, conditions grew worse, until they began to fear that actual starvation would be upon them before any replacement of water and provisions could be effected.

Imagine then their excitement, when, far away on the horizon, they perceived a white sail and realized that relief was within their grasp if they could but reach out and take it. It was a calm day, so they bent to their oars with a will and, though their throats were parched and their stomachs empty, drove the boat steadily toward the stranger.

But a sad awakening was in store for them. When they had approached sufficiently near, Peter saw that the fat hare he had hoped for was a mighty lion, for the small white sail had grown and grown and multiplied until he now recognized the tall masts and lofty spars of a great Spanish galleon—a well-armed treasure ship belonging to the monarch of a powerful seafaring nation. And to make matters even worse, he saw the insignia of a vice admiral of Spain carried proudly on the majestic vessel which lay becalmed before them.

Despair seized Peter's crew, as well it might, for their condition now seemed desperate beyond description. Lacking food and water, hungry and tired, they were nearly ready to stretch themselves out in the bottom of their boat and patiently await the grim hand of death.

But Peter was made of sterner stuff. There, only a few miles away, lay meat and drink in plenty. There also lay wealth and power and fame. True, these things were guarded by armed men and by the great guns of the ship, but Peter knew that courage, bred of desperation and despair, can oftentimes work seeming miracles when opposed to unjustified self-confidence and slackness of discipline. He knew that his men possessed the courage of desperation in an exceedingly large measure. He felt confident that the Spaniards would so underrate his tiny boat as to quite dismiss it from the realm of a possible dangerous aggressor.

So the pirate chief talked to his twenty-eight followers and told them of the horrible death that awaited them; spoke of their parched throats and burning skins and of the agony they would endure when they tried to allay their thirst with salt water;

spoke of the savage sharks waiting patiently alongside to receive their bodies, and mentioned the hangman's noose that dangled always ready if they should be so fortunate as to reach land while life still remained. He then told them of the plentiful and rich food, of the red wines, of the wealth and plunder to be found on the stately galleon. He surprised and startled them, and brought them suddenly out of their black despair, by declaring that they could take the Spaniard if they had the will and the courage to do so.

The result was just what Peter had hoped to accomplish by his lion-hearted talk. One and all, they swore a great oath that, under the leadership of their indomitable chief, they would capture the galleon or perish in the attempt.

As the painted sails flapped gently with each roll of the becalmed ship, the admiral and some of his officers indulged themselves in a game of cards.

The great man was informed that a vessel had been sighted, and, keeping ever in mind the danger from pirates, he went at once to take a look at the stranger. When he saw that it was only an open boat, with one small sail and no artillery, he was contemptuous in his comments and his actions. He spoke most slightingly of such an improbable enemy and told his officers they might, if they wished, rig out a boom and hoist the cockleshell in on deck where they could examine it and satisfy their curiosity at their leisure. Then, turning on his heel, he went back to his game of cards and gave never another thought to the little craft tossing serenely on the glassy sea a few short miles away.

The spirit of the admiral most naturally became the spirit of his officers and men. They dismisssed all uneasiness from their minds and resumed their tranquil occupations and amusements.

As midnight approached, muffled oars drove the boat of the pirates silently through the water, every moment closer to its prey. The night was of almost inky blackness so there was slight chance of their being detected until they were close aboard.

Peter, with that keen insight into human nature which made him a leader of men, realized that even despite their oath there were probably some few among his twenty-eight adventurers who would hang back when the attack was launched. He determined on a last heroic measure, and ordered his surgeon, who was also his carpenter when not engaged in altering or repairing maimed fighting men, to make a large hole in the bottom of the boat as soon as they were alongside the galleon, so that the little craft would literally sink under their feet. There was to be no possible backsliding. Every man had taken the oath to win victory or death so none could even protest against this willful destruction of their only avenue of retreat.

As the leader had anticipated, the watch on the great ship was so negligent that his boat actually got alongside without being discovered. It had no sooner grated against the rugged planks of the galleon than twenty-eight of its twenty-nine occupants were away like a flash and went climbing up the ship's side with all the agility and ferociousness of leopards of the African jungle. The twenty-ninth man, the surgeon-carpenter, broke a great hole in the bottom of the boat and then followed his comrades—possibly even more speedily than the others since the way was now clear, and even a pirate surgeon had to maintain a reputation for terrible aggressiveness.

The surprised and astounded officers and men who kept the watch on the Spaniard's decks offered almost no resistance. How could they, when out of a clear and cloudless sky, out of an atmosphere of perfect peace and serenity, this avalanche of death and destruction had engulfed them? They had not the slightest idea whether their aggressors numbered ten or a thousand; neither did they know whether they came from the sky or the surface of the sea. They simply capitulated, and accepted sudden death or captivity in accordance with the passing whims of the desperadoes they encountered.

Peter, with one or two assistants, rushed for the great cabin of the ship's commander. He burst open the door and, finding the admiral still playing at cards with his officers, pointed his huge pistol at that high official and demanded instantaneous and unconditional surrender.

Consternation filled the low-ceilinged cabin. The admiral leaped to his feet, crying, "Lord Jesus, are these devils?" But when he looked squarely into the suggestive barrel of the pirate's pistol, and read in the fiery depths of the leader's eyes that resistance would be fatal, he gracefully surrendered both his person and his ship.

The victory was won! The galleon was

taken without the loss of a single pirate! Starvation and death had been forced into the background, for now every one of the twenty-nine assailants was a man of wealth and importance. It was true that their riches were acquired by a method that would have been considered outside the pale of civilization at a somewhat later day and age, but in the seventeenth century such captures were winked at and even encouraged by those nations unfriendly to the Spanish policy of restricting all trade in the West Indies to its own nationals.

After victory, sometimes the finer elements of a man's character are shown. And so it was with Peter the Great, pirate though he was. He would not permit of a wholesale massacre of his captives; he did not torture them for mere amusement; he made no effort to revenge himself and all other Frenchmen upon the Spaniards by making these particular individuals walk the plank and then swim hopelessly until they should sink from sheer exhaustion. On the contrary, Peter landed all his prisoners, except such as he needed and who desired to take service with him, on the island of Haiti, where they could readily obtain assistance which would at least preserve their lives to them.

Then he sailed on across the broad Atlantic and finally brought the galleon safely into one of the ports of continental France. An advantageous sale of both the ship and its cargo was readily effected, and Peter, after a fair division of the proceeds, simply disappeared from sight and history.

It is believed that he abandoned his precarious business of piracy, settled down in some part of sunny France, and lived out his life as a wealthy and respected citizen.

During the part of Peter's life that we know, he gave proof of having qualities that might well have graced the career of one engaged in a much higher and more respected calling. He showed initiative when he went out and sought the success which would not come to him; determination, when he persisted where all others had lost hope; mercy, when he freed his prisoners without abuse or unnecessary suffering; and moderation, when, having gained reasonable wealth, he gave up the practice of piracy and became an honest citizen.

Thus ends the story of a daring deed which had a tremendous effect upon piratical activities in the Western Atlantic, for the great success achieved, and the seeming ease with which the capture was made, caused a veritable flood of adventurers to go and try to do likewise. But the happy termination of Peter's career was not vouchsafed to very many of his own kind who, for the next hundred years, followed in his footsteps and ravaged the waters of the Caribbean and the coasts of the Spanish Main.

Turner's "Mount Vesuvius *in* Eruption *in* 1818"

EDITOR'S NOTE: Captain H. A. Baldridge, U. S. Navy, who carried on the correspondence which led to the reproduction of this month's colored frontispiece, has prepared the following notes at the request of the editor.

WHY should the PROCEEDINGS publish a reproduction of "Mount Vesuvius in Eruption in 1818," by the great Turner? What interest can the Navy and its friends have in this painting? What connection is there between art and the naval profession?

The answer can be given best, perhaps, in the words of the present owner of the original painting, Sir Robert A. Hadfield, of London, who in a letter to the writer regarding it said, "I like it because to me it is a metallurgical picture!"

Sir Robert has been a foreign associate member of the Institute for a good many years and when this picture was mentioned some eighteen months ago in the words quoted above, the Institute determined to publish it if permission could be obtained from the owner, provided of course, justice could be done in the reproduction, both to the painting and to the artist.

Permission has been graciously given and the owner went to the trouble and expense of having an autochrome made which is "a faithful copy of the original," and upon its receipt the Institute spared no expense for the engravings and printing.

The United States Navy has long been interested in metallurgy and, by its insistence years ago that the ships of the "New Navy" be built of steel manufactured in the United States, was largely responsible for the first steel produced in this country. The Navy's specifications for armor gave a great impetus to the scientific handling of ores and to the heat treatments so necessary to produce the finished product.

EVERY NAVY IS INTERESTED IN METALLURGY

In an address before the "Empire Mining and Metallurgical Congress," 1924, Sir Robert A. Hadfield said in connection with a colored heat chart then under consideration:

> Whilst, therefore, the use of such a chart is not advocated except in the total absence through impracticability of other means of determining temperature, even that of the eye of an experienced workman, it is believed that, since such charts find a use, the present one will be found a better guide than some which have hitherto been published, which, indeed, if put to the test as this one has been, would have hopelessly failed.
>
> With these reservations as regards its use, no doubt metallurgists, engineers, and others concerned with the working of high-temperature plant, may find it useful to have such a chart; hence the author's mention and description of it here.
>
> The chart has been limited at the upper end to a temperature of 1600° C., mainly for the reason stated—that discrimination of temperature by color at this high temperature becomes very insensitive, the effects of brilliancy predominating. This temperature will be found high enough for most practical purposes.
>
> The judgment of temperature in these higher regions must be based on some other physical property of the material heated than the light emitted. We have already alluded to this question in discussing melting-furnaces.
>
> The actual color at this high temperature is a matter of interest. Quite commonly, but probably without sufficient care, temperatures even below 1600° C. are often referred to as a white heat, which, of course, does not really exist. No doubt the fact that brilliancy and glare on the eye is allowed to affect its true judgment is the cause of this. The reproduction by artificial means even of daylight, which is generally regarded as white (as will be seen from the lamps used in illuminating the chart), involves the use of a particular shade of blue. The actual description of the true color is a matter of some difficulty, and the author would be glad to have suggestions. The nearest descriptions in terms of the color of familiar objects that it has been possible so far to find are shown, although obviously they admit of some improvement. It is important to add that the chart should not be used to estimate the temperature of flames nor of heated objects illuminated in any way by flames. The color of flames is a matter quite distinct from that of solid bodies, and in fact flames, even those of approximately the same temperature, may differ widely in color, depending on the materials under combustion.

Even in the case of solid bodies, especially in the open, the colors are not quite identical. Under enclosed conditions as in a furnace, however, the differences are negligible, or at any rate within the limits of accuracy of a color chart. When confined to iron and steel the chart may be used indiscriminately on material in the furnace, or in the open as in the case of a rolling-mill. For use with some other metals in the open, however, it would require modification.

Finally, in this connection the author may perhaps be allowed to digress for a moment from the scientific to the artistic aspect of temperature colors. It is hardly possible to conceive a more beautiful attempt to depict the different colors and the shades of high temperatures than that shown in the wonderful picture "Mount Vesuvius in Eruption in 1818," painted by that renowned British artist, J. M. W. Turner, R.A. As this water-color happens to belong to the author, he hopes to have the pleasure of exhibiting the picture itself at the Congress, or, failing this being possible, then as a lantern slide, should the one now being prepared prove satisfactory. No mere copy, however carefully prepared, can at all equal the beautiful tones of the colors in the picture itself, which vary from dull red to the most delicate tints, indicating temperatures from about 600° C. to 1400° C., these being depicted by Turner in a marvellously artistic manner.

It may be of interest to mention that it was largely owing to this picture that the preparation of the colored diagram now exhibited was undertaken. If this great artist was able to depict temperature colors so correctly, it was thought that surely it should be possible to follow his example.

The following description of the painting is from the Sheffield *Daily Telegraph,* July 18, 1927.

The picture, which is entitled "Mount Vesuvius in Eruption in 1818," was painted about the time of Turner's first visit to Italy in 1819, when he made his excursions into the realm of color with a masterly power in brushwork that was the keynote of his refined truthfulness. It is a remarkable coincidence that this picture should have come into the possession of a great master of science like Sir Robert Hadfield, to whom no secrets of metals in their composition, affinities, or adaptabilities are hidden, and who by means of analysis —chemical, physical, and spectroscopic—with the aid of heat almost beyond measurement, can even compare by the color of varying flames and vapors in a picture the actual nature of the material depicted. Though Turner was not troubled by any thought of scientific accuracy, he distinctly realized it by his penetrating power of observation, his keen perception of color, his skill in brushwork, which enabled him to mingle tones, whether delicate or glaring, with a degree of correct harmony that few artists could equal.

The painting reveals Vesuvius in the middle distance in violent activity, flames and burning lava being thrown through the valleys beyond, while to left and right dark fire-fringed smoke hurries away; buildings of Naples on the bay, which placidly reflect a line of white fire; the red glow smoothed out, while darker shadows spread to right and left, and on the extreme left above the center is the crescent moon, its silvery brightness modified by the battle of colors from the disturbed crater.

The picture has been painted with skillful vividness in rather fine brushwork that gives great strength to the color schemes, both in their refined and glaring accents, making a composition of tones through a fiery scale to the finest reflection; the outlines of the landscape retaining their full grandeur, lake and buildings being topographically expressed without any aggression that would lower the magnitude and dignity of the theme.

And within all this scenic beauty so finely expressed was the basic fact of matter in many combinations burning with terrific heat that practically reduced them to their primary elements that could be scientifically examined and classified.

In a letter received from Sir Robert Hadfield, after the present writer first inspected the picture in the exhibition at Burlington Arts Club, by the owner's invitation, he remarked: "As probably you can imagine, this picture specially appealed to me as a metallurgist, because it dealt with high and low temperature colors, depicted by Turner in such a marvellously clear manner. Not long ago, with the assistance of our research laboratory, I was getting out a scale of temperatures based upon suitable color effects, and we compared our results with those of Turner; in a joking way, I would say that he was easily first in his accuracy!"

He further says: "When buying the picture it was its metallurgical aspect and bearing which induced me to obtain it. The picture might be termed—and as an expression of my admiration for this great British artist—a pearl of great price."

Probably no picture has ever before been subjected to such a test of merit, and none could ever have stood it with more complete art purity. —E.H.

The following is from the Sheffield *Independent,* February 26, 1927.

Turner painted three studies of Vesuvius, and this picture . . . . possesses a double interest. It represents Turner's work at its highest, and is one of the best of his Italian studies.

With masterly skill he shows the brilliant colors representative of molten lava at the mouth of the crater, in a circle of deep gloom representing the effect of the mass of smoke at night. In spite of this, however, the buildings of Naples and the forms of terrified inhabitants are indicated in the foreground.—*London Correspondent.*

Commodore Ridgely's Account *of the* Last *of* Somers

By Rear Admiral Livingston Hunt, *(S.C.) U. S. Navy, (Retired)*

ANYTHING relating to Richard Somers must always be of absorbing interest. Of course, there can never be anything new to be revealed about his short life, of which we already know that he was a fearless, generous, affectionate man; nor can any light ever be thrown upon the exact manner of his death. We only know that he died gladly for his country. There is, however, a satisfaction to be derived in keeping alive in every minute detail the events that accompanied the last hour of his life, such as they have been handed down to us. Fortunately there is in existence an account of the scene and activities of that memorable night before Tripoli, which was written by an eye witness, and by one who followed with a spy-glass the slow movements of the *Intrepid,* in the darkness, never losing sight of her until her end. This witness was Acting Lieutenant Charles G. Ridgely, a young officer who had served under Somers on board the *Nautilus* for the previous three months and who had shared with him the risks and daring of each of the four fierce fights which gunboat *No. 1* had with the Corsair flotilla in August and September of 1804. When Somers went over the side at nine o'clock on the night of September 4 to get into the small boat which was to take him towards the *Intrepid,* he left his first lieutenant, Washington Reed, in command of the *Nautilus.* Reed then gave an order to young Ridgely to take a night-glass and follow the progress of the ketch as well as he could, until she should explode. Ridgely, who was an alert and clever young officer of twenty years, did as he was told, and has left a written account of what he saw as well as of other incidents of that occasion. His story is in the form of an article which first saw the light thirty-two years after the events it describes, and was printed in a magazine known as the *Naval Magazine,* published by the Naval Lyceum in the New York navy yard. This magazine lived for two years only, from 1836 to 1838, and today there are probably not more than half a dozen copies of it in existence. Some of our naval histories show an acquaintance with the account written by Ridgely, but their narratives lack the detail and vividness that stamp the words of the actual observer of the scene. When Ridgely published his article, he had arrived at the rank of commodore and was a man of distinction, being at the time in command of the navy yard at New York. That Somers himself would have been pleased by the eulogy of his former comrade in arms there can be no doubt, for we are told by Commodore Preble in his report to the Navy Department of the action against Tripoli of August 3, 1804, that Captain Somers "speaks in the highest terms of Midshipman Ridgely .... attached to gunboat *No. 1.*"

The issue of the *Naval Magazine* which contained the article by Ridgely was that of March, 1836, and the article is here given in full.

"Blowing Up of the Ketch 'Intrepid' by Master Commandant Richard Somers and Those under Him. September 4, 1804

"A Naval Reminiscence

" 'All of which I saw, part of which I was.'

"In the year 1804, when Preble, as commodore of the American squadron in the Mediterranean, was gaining glory before Tripoli, alike for himself, his officers and crews and for his country, Lieutenant Commandant Richard Somers had command, under him, of the *Nautilus,* a schooner of fourteen guns.

"During the several fights which had previously occurred with the enemy, this offi-

cer had shown great bravery as commander of gunboat *No. 1*, and now suggested to the commodore that a happy result might possibly be obtained by converting the ketch *Intrepid*, a captured craft of about seventy-five tons—the identical vessel with which the gallant Decatur had boarded, recaptured, and burned the frigate *Philadelphia*—into a fire-ship, and sending her into the harbor under the walls of the Bashaw's castle, in direct contact with the entire marine force of the Tripolitans.

"This daring and highly dangerous enterprise being determined upon, Somers, with whom it had originated, received the orders—to which he was thus entitled—to conduct it; and the necessary preparations were promptly made by him. Fifteen thousand pounds of powder were first placed loosely in the hold of the ketch, and upon this 250 thirteen-inch fused shells with a train attached from the *cabin and fore-peak*. Only one officer, the talented and lamented Lieutenant Henry Wadsworth—brother of the present Commodore Wadsworth—was to accompany him, and four[1] volunteer seamen were to compose his crew.

"All things were now in readiness except the selection of the men—for it came to this at last, every man on board the *Nautilus* having volunteered for the service. This done, it was determined without delay to attempt the enterprise—to succeed in it or perish.

"Two nights successively did the *Intrepid* move; but owing to light and baffling winds nothing could be accomplished. These failures, and an unusual movement in the harbor after dark on the third night, led Somers to believe that the suspicions of the enemy had been excited and that they were on the look-out. It was the general impression that their powder was nearly exhausted; and as so large a quantity, as was on board the ketch, if captured, would greatly tend to protract the contest, he addressed his crew upon the subject, telling them 'that no man need accompany him who had not come to the resolution to blow himself up rather than be captured; and that such was fully his own determination!' Three cheers was the only reply. The gallant crew rose as a single man with the resolution of yielding up their lives sooner than surrender to their enemies; while each stepped forth and begged as a *favor* that he might be permitted to *apply the match!* It was a glorious moment and made an impression on the hearts of all witnessing it never to be forgotten.

"All then took leave of every officer and of every man in the most cheerful manner, with a shake of the hands, as if they already knew that their fate was doomed; and one and another, as they passed over the side to take their post on board the ketch might be heard, in their own peculiar manner, to cry out, 'I say, Sam Jones, I leave you my blue jacket and duck trousers, stowed away in my bag'; and 'Bill Curtis, you may have the tarpaulin hat, the Guernsey frock, and them petticoat trousers, I got in Malta—and mind, boys, when you get home, give a good account of us!' In like manner did each thus make his oral will, to which the writer was witness, and which 'last will and testament' he caused to be executed to the very letter.

"It was about nine o'clock on the night of September 4, 1804, that this third and last attempt was made. The *Nautilus* had been ordered to follow the *Intrepid* closely in, to pick up and bring out her boat's crew in case they should succeed in the exploit. Hence, though it was very dark, we never lost sight of her, as I had been directed by the first lieutenant—the late gallant Washington Reed—who commanded in the absence of Somers, to keep constant watch of her for this purpose with a night-glass.

"At the end of an hour, about ten o'clock, while I was engaged in this duty, the awful explosion took place. For a moment, the flash illumined the whole heavens around, while the terrific concussion shook everything far and near. Then all was hushed again and every object veiled in a darkness of double gloom. On board the *Nautilus* the silence of death seemed to pervade the entire crew; but quickly the din of kettle-drums beating to arms, with the noise of confusion and alarm, was heard from the inhabitants on shore. To aid in the escape of the boat, an order was now given by Reed to *'show a light'*—upon the appearance of which, hundreds of shot from an equal number of guns of heavy caliber from the batteries near, came rattling over and around us. But we heeded them not; one thought and one feeling alone had possession of our

[1] Commodore Ridgely here speaks only of the quota from his own vessel, the *Nautilus*. There were six other sailors, added to this party, all from the *Constitution*.

souls—the preservation of Somers and his crew!

"As moment after moment passed by without bringing with it the preconcerted signal from the boat, the anxiety on board became intense; and the men, with lighted lanterns, hung themselves over the sides of the vessel till their heads almost touched the water—a position in which an object on its surface can be seen farthest in a dark night—with the hope of discovering something which would give assurance of its safety. Still no boat came and no signal was given; and the unwelcome conclusion at last was forced upon us that the fearful alternative—of blowing themselves up rather than be captured—so bravely determined upon at the outset of the enterprise, had been as bravely put in execution. The fact that the *Intrepid* at the time of the explosion had not proceeded as far into the harbor, by several hundred yards, as it was the intention of Somers to carry her, before setting her on fire, confirmed us in this apprehension; still we lingered on the spot till broad daylight—though we lingered in vain—in the hope that some one at least of the number might yet be rescued by us from a floating plank or spar, to tell the tale of his companions' fate.

"To our astonishment we learned the next day that Lieutenant Israel, a gallant youth who had been sent with orders from Commodore Preble to Somers after he was under way in the ketch, had accompanied him in the expedition and had shared his destiny.

"Such was the end of the noble fellows, who, a few days only before, on board their own gunboat, *No. 1*, had beaten six of the enemy's fleet of equal force with themselves, immediately under the guns, and within pistol shot of a shore battery; an achievement accomplished only in their peculiar position by backing astern and keeping up an incessant fire of canvas bags filled with 1,000 musket balls each, till our gallant commodore, in the *Constitution,* stood in to take the fire of the battery and thus enable us under his cover, to obey the order, 'to come out of action'—a signal which had already been flying more than an hour, and which Somers at first would not, and at last, (from the fierceness of the fight) could not see.

R."

Courtesy E H. Curlander, Art Dealer, Baltimore

FRUIT STAND AND STATE HOUSE TOWER, ANNAPOLIS
(From an etching by Eugene Paul Metour.)

Navy Recruiting Bureau, New York

PRESIDENT COOLIDGE, IN THE "*MAYFLOWER*", BEING SALUTED BY THE MIDSHIPMEN, PRACTICE CRUISE, 1927

Navy Recruiting Bureau, New York

PRESIDENT COOLIDGE, IN THE "*MAYFLOWER*", BEING SALUTED BY THE MIDSHIPMEN, PRACTICE CRUISE, 1927

Wide World Photos

BOAT DRILLS, U.S. NAVAL ACADEMY

Midshipmen are taught to handle all types of boats.

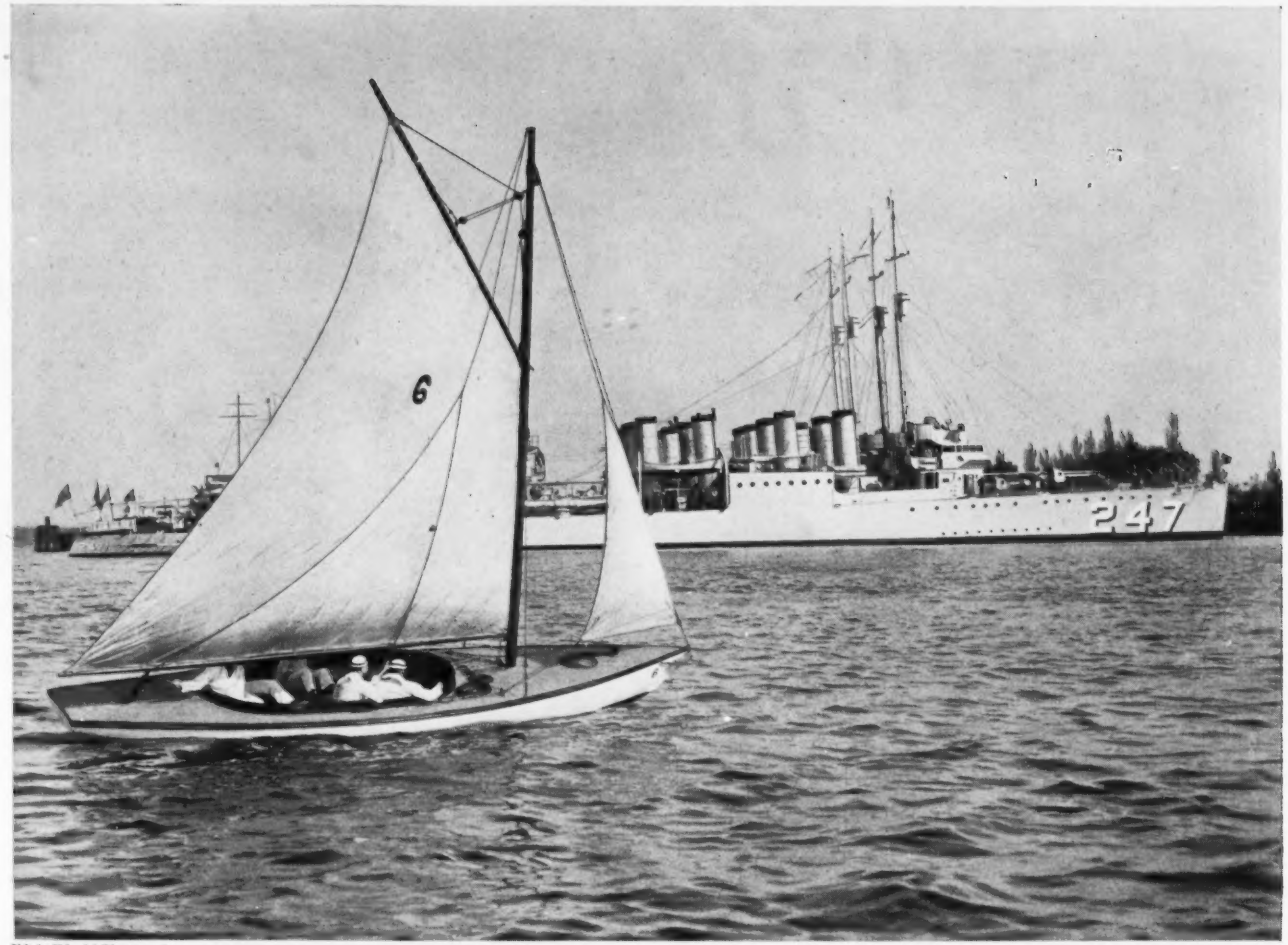
Courtesy E. H. Curlander, Art Dealer, Baltimore

"DOCK ST.—THE JUNK SHOP"—ANNAPOLIS
(From an etching by Eugene Paul Metour.)

(From an etching by Eugene Paul Metour.)

Navy Recruiting Bureau, New York

"BRIGHT WORK"
Keeping the guns "Fit to Fight."



Wide World Photos

A FAIR WIND
Where business is combined with pleasure.

Wide World Photos

A FAIR WIND
Where business is combined with pleasure.

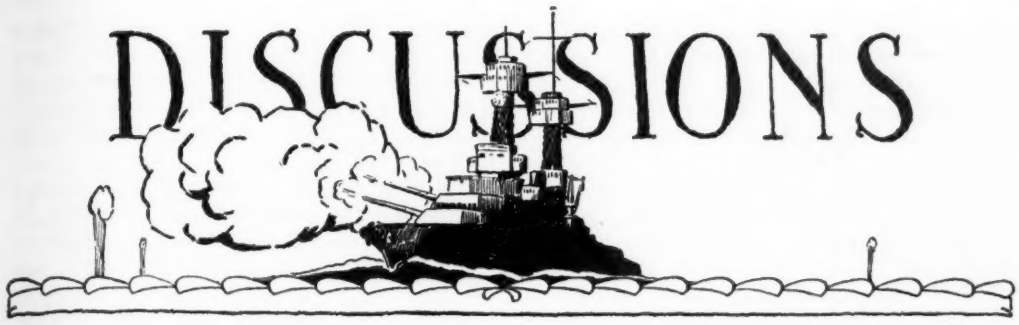
Wide World Photos

THE END OF A "PERFECT DAY"
Midshipmen securing their boats after drill.

Courtesy J. A. Pringle, Photographer 3C, U.S. Navy

THE CLASS IN AVIATION

The graduating class at the Naval Academy takes six weeks training in aviation before going to sea.



Selection of Enlisted Men for the Naval Academy

(See page 457 this issue)

REAR ADMIRAL R. R. BELKNAP, *U. S. Navy.*—While agreeing that officers generally should be correctly informed about the Naval Academy preparatory class and that the greatest care should be used in accepting applicants I take exception to representing it as a powerful means to elevate the service. It offers a way to enter Annapolis to those who cannot obtain appointment otherwise, and their preparation in regulated classes does for them what final preparatory schools outside do for candidates in civil life. In these respects the provisions for admitting enlisted men seem wholly desirable; but that the standard of both future officers and enlisted personnel will thereby be raised appreciably seems to me open to question and too far from probability to have been the underlying reason for the law in the matter. I think the real reason for the law was to open officerhood to enlisted men more than was provided for by previous laws.

Democracy has been mentioned in connection with this subject, but I think it has little to do with it, now that the doors are open to all who have in them the makings of naval officers, regardless of influence, means, or other advantages. So far as my observation goes, a man is respected and honored in the Navy according to what he is and does, more than in any other walk of life, and that is the ideal of democratic principles.

The main consideration is that the naval profession requires officers to develop the highest ability and broadest understanding. With size of armaments now limited by treaty, quality is more than ever important, so that it is essential to the fulfillment of the Navy's mission not to lower the personnel standard. No one will question that some very good officers may develop among those who enter by enlisting, but that such a course of development promises better as a main reliance than appointment direct to Annapolis does will not bear the test of logic or of concrete experience. In fact, the Naval School, now the Naval Academy, was founded for the very purpose of *starting* young officers *as officers* under officer conditions. If they are to become officers, the earlier they begin to prepare for that station the better.

In order that enlisted men entering Annapolis may be well prepared to continue there, it seems only reasonable to give them the best preparation possible within the time allowed, so that those who succeed may begin the academic course on as near equality with all other candidates as practicable, and so that those who fail on the examination may have no just cause of complaint. Systematic instruction, regularity, and strict discipline in the two Naval Academy preparatory classes offer the best preparation, prevent waste of time and effort through irregular, haphazard study, and eliminate much unfit material before it has gone too far.

For these reasons, the Naval Academy preparatory class should be fully and competently officered. I have recommended a lieutenant commander as head, a lieutenant as assistant and instructor, and five ensigns as instructors and officers of the day; their discipline should be maintained at a high standard. At Hampton Roads they are kept close to the Naval Academy fourth class routine; their physical condition and development should be well looked after; and their accommodations for lodging, messing, recitation, and study should be satisfactory

and separate from other enlisted personnel —all such requirements being very well met at Hampton Roads.

The magnitude of this preparatory work is shown by the numbers in the classes. In 1925, 126 candidates began the five-months' course of instruction on November 1 at Hampton Roads, 118 at San Diego, total 244, of whom 145 took the examination and ninety passed—about thirty-three per cent. In the previous year, about thirty-seven per cent passed. In 1926, the entries were 183 at Hampton Roads, 100 at San Diego, total 283. At Hampton Roads, 147 remained in the class on the eve of examination. In my time at Annapolis, not many more than 183 were left in the whole Academy after the semi-annual examination. So to do their work properly, our six instructors have had a real job—thirty to thirty-five men in a section, six subjects of instruction, and a five-months' course. There is also much to do outside the section room—extra instruction, discipline, routine to conduct, inspections, drill enough to keep them fit, athletics, officer of the day, records, and test examination papers. Hence a seventh officer is desirable, for general charge and supervision, and a lieutenant commander is preferred, as more experienced than a lieutenant. Such a staff would be no more than fitting, as this five-months' course may serve to fill up the holidays in earlier schooling.

The claim that enlisted candidates have an advantage over those entering Annapolis direct from civil life, in having a year's naval training to begin with, is doubtful; for there is the youthful tendency to be tough, as the result of such experience, to show their tender classmates how hardboiled seagoing makes them; but aside from that, the said year in most cases is spent mostly at training stations, not at sea. If all midshipmen had to do a year in apprentice seamen and seamen second class duties before beginning the present fourth class academic year, it would make the Naval Academy course five years instead of four years and that would be a new system generally. The course is now practically five years for enlisted candidates who succeed. If all midshipmen were to enter and serve a year as enlisted men, the discards during this preliminary year would have cost only $21 or $36 in monthly pay (as A.S. or S2c.) instead of at the midshipman $65 pay rate. On the other hand, the whole class would be subject to some of the doubtful influences to which all young enlisted men are subject —influences that are undesirable for any enlisted men and certainly not beneficial for prospective officers, in their impulsive immature years.

Another consideration is that as enlisted men must serve a year before entering the Academy and may not enlist under eighteen years, sometimes not under seventeen, they would average older than the average of the rest of their class. If older age at entry meant better outside preparation, there would be no objection; but judging by experience so far, enlisted candidates are below average in preparation, except those who enlisted with the primary well-formed idea to become officers.

If it be decided that a year's naval experience is desirable before beginning the academic course, then all should have it, and presumably they would cruise all together in a midshipman's training ship or squadron. But that would be part of an entirely different system from our present one. As it is now, the government provides free preparatory instruction for all enlisted candidates who apply and show the apparent qualification. During such preparation, the government maintains them and gives them full pay for about seven months during which they render no service in return, except as later results from improvement through their study. This is generous treatment, which makes it not only possible but indeed easy for the ambitious and capable young enlisted man to improve his opportunity.

As to the system of appointment to Annapolis by senators and congressmen, before suggesting any material alteration, one should first be thoroughly informed as to how it works, what the results have been, and how the general quality of appointees compares with the general quality of recruits upon *enlistment*. Under any system there will be a percentage of cases that seem unworthy; but even they are judged rightly only on all the facts. There are different ways of appointment, at the senator's or congressman's choice. Some hold restricted competitive examinations, some unrestricted, some make their own selections, some await applications. That the appointer retain an interest in his appointee is most desirable, fostering his interest in naval affairs in general; and if an unsuitable man is occasion-

ally kept in overlong, so has outside interest saved many a good man who was in trouble. On the whole, the result of the present system is a body of young men drawn from the whole country, mostly from such circumstances and of such character and application as to secure for them adequate preparation. The probability is that they will do better than those who come from less favorable educational conditions or who have not developed the character and application to profit by their opportunities. Those who have the requisite education and character but cannot obtain direct appointment are amply provided for by present law, provided they are willing to serve out a four-year enlistment, if they fail to pass among the first 100.

It seems to need no argument that raw material promising the best development in leadership and broad education and cultivation is most likely to be found among those who have profited by normal advantages. It would be very costly, in more than mere money, to *seek* such material in fields less favorable, for one reason because smaller percentages succeed in entering the Academy and still fewer, relatively, graduate, through deficient grounding.

Full information should be published about the Naval Academy preparatory course—very carefully by recruiters, temperately to men already enlisted. If the prospects of officerhood are made alluring, many will enlist expectantly in response, of whom many would be disappointed. The existing stipulation to serve out their enlistment if unsuccessful would be accepted willingly enough when they enlist, for all such youths are confident; but afterwards they would think it a hardship and some would bring serious charges of misrepresentation. This came about when naval apprentices could become officers in the late '60's.

The Defense Against Propaganda

(See page 534, May 1927, PROCEEDINGS)

BROCKHOLST LIVINGSTON.—Mr. Buell offers us a "defense against propaganda." "The best defense," he sums up, "is a vigorous offense." And yet, in a summary of the annual report of the executive secretary of the Navy League, the total income of the League for the year ending March 31, 1927, was $22,234.28; the expenditures $21,546.17. Compared with this we find a certain large "peace organization" spending over $14,000,000 on the pay of professors whose duty apparently seems to be to spread internationalism and pacifism. In the face of this, how are we to pursue this vigorous offensive? But surely if the pacifist and his breed can foster support, the Navy can also do so. I believe a salesman who is confident of his produce can "sell" it even in the face of unfair competition on the part of others. And certainly, pacifism is unfair to competition as it relies on falsehood to "put it over." Is it human nature to use the "Reason not Propaganda" slogan rather than "Follow the Leader"? The entire press of the country is not in sympathy with the "Reason not Propaganda" slogan. The press reaches too many people who, if they have reason, do not use it. The press, to them, is gospel. In a way, the press and "free speech" are a curse but they must be tolerated because of the freedom of the nation. It must be for us to prove that our doctrine—our produce—is best, which, of course, it is. If it is necessary to use "super-emotionalism" to overcome the emotionalism of our opponents, then let it be so. If the sea cannot produce a greater emotion than the treason of pacifism, it is time we retired and left the field free for those college professors whose aim is anything but proper education of our youth.

Need the voter know that he is being taxed to maintain speakers and writers abroad? If he can use reason he must know that "it pays to advertise." If he cannot use reason it should be as easy for us to persuade him of the necessity of maintaining these "promoters" as it is for the other side to persuade against them.

This writer would be the last to ever speak against our diplomacy or its makers but it must be admitted that while we placidly accept the writings and speeches of foreign diplomats, while our pages are open to their propaganda, our State Department officials often, perhaps to "continue the peace," fail to take advantage of the chances offered and consequently fail to register against the foreign "paper invasion" which continues unabated.

How true, yet how hard on the public, is Mr. Buell's statement: "It is not safe to assume that the public understands anything. There are many voters, especially among the new women voters, who do not know enough about history, and about for-

eign affairs, to know that we need a national defense." This is especially true of "the new women voters" as can be proven by their oftentimes excessive hatred of armaments. Their knowledge of foreign affairs may be slight but how much is their present knowledge perverted by "dear Professor Blah of England" and "delightful Count Bunk of France"? If the tariff on cotton and wheat could be forgotten for a moment and a restrictive tariff put on foreign nobility and professors, the influx of anti-defense-anti-American-propaganda would be materially lessened. And then, if some of the *grandes-dames* of Park Avenue, who, as a radical recently told a Congressional committee, have so much money they are always willing to finance some new venture, could be persuaded to divert some of their overflowing funds to a more useful purpose, it would not be necessary for the Navy League to attempt to meet the $14,000,000 and more of the other side with its present paltry $22,000. Money is an evil but it certainly is a most necessary one.

Mr. Buell concludes his article with: "By all means let us set up foreign ideas as something to hate. . . . . But let us fight against the ideas themselves and not against the methods used in their dissemination." We are not fighting the foreign ideas because they are foreign but because they are aimed against us. The foreign ideas in the foreign land are perfect. Here, they are in opposition to *our* ideas and consequently cannot be tolerated. To overcome them we must not, as the pacifist, be too proud to fight but it must, for us, be *guerre à outrance.*

Bully Hayes in Guam

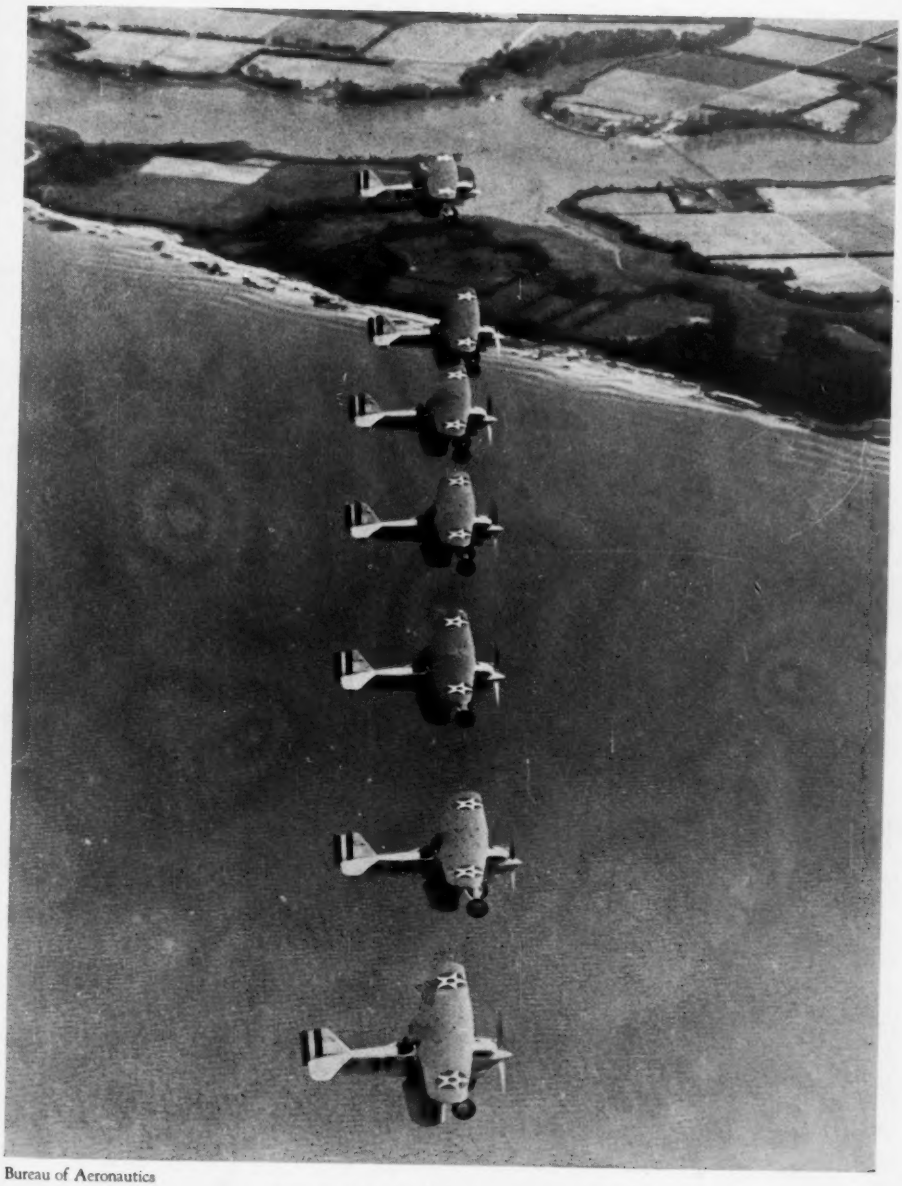
(See page 956, September, 1927, PROCEEDINGS)

LIEUTENANT COMMANDER P. J. SEARLES *(C.E.C.), U. S. Navy.*—Among the old-timers on the Island of Guam is Mr. Henry Millinchamp, an American whaler who in his youth cruised widely through the South Seas and who has lived in the Marianas for almost fifty years. Mr. Millinchamp is now eighty-six years old, is in good health according to recent letters from Guam, and retains a keen memory of events of long ago. One of his interesting yarns is of a visit Bully Hayes made to Guam many years ago.

Hayes occasionally put into Guam for the purpose of carrying away political prisoners. Guam, in the nineteenth century, was used as a penal colony, and at one time it is said, there were as many as 700 political exiles on the island who had been sent there from Spain or the Philippines. Many of these prisoners were men of intelligence and culture, accustomed to a life of comfort in their homeland, and exiled solely because of their disagreements with existing political conditions. Hayes was skipper of *The Diver* and agreed to carry the prisoners away from Guam for twenty-five Mexican dollars each. It is not known definitely just where he contracted to take them, but it is thought that they were to be taken to one of the islands of the Caroline, Gilbert, or Marshall groups, from which they had hopes of later escaping.

On the occasion of one such visit of rescue, Hayes' ship was reported to the Spanish governor as being anchored off Ridid-yan point, which is the extreme northeastern point of Guam and is a dangerous anchorage. The governor, suspecting something of an unlawful nature in a vessel lying in those waters, sent an officer with six mounted soldiers to investigate. Upon their arrival at the north end of the island, they made the discovery that there were twenty-five prisoners on board the pirate ship which was anchored just outside the reef. Hayes, who was bathing in the shallow water near the beach, was captured and brought to Agana practically nude. The prisoners on board *The Diver,* seeing the capture of the skipper and knowing that they would be retaken, prevailed upon the crew of the ship to up anchor and sail away.

Hayes was placed on trial by the Spanish authorities but was remanded for a more formal trial before the courts of Manila. Due to his real or pretended ill health and to his inability to live on food served in the jail, Hayes was placed on parole by the governor and for several months resided in a boarding house managed by Mr. Millinchamp. Later he was sent to Manila and while awaiting trial was again placed on parole in custody of the American Consul. Breaking the parole, Hayes made a thrilling escape on a schooner yacht which he captured single handed in the harbor, and sailed away with only himself and the wife of the ship's cook on board. So far as is known he never returned to Guam.



Bureau of Aeronautics

FIGHTING PLANE SQUADRON "IN LINE"

International Newsreel

H.M.S. "*RODNEY*"
Showing the unusual turret arrangement of this new battleship.

PROFESSIONAL NOTES

1 April to 30 April

Compiled by

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Showing the unusual turret arrangement of this new battleship.

GREAT BRITAIN

Aircraft on Warships

Naval and Military Record, March 21.—The decision to furnish all the new cruisers, either built or building, with a seaplane apiece may be taken to mean that this has now come to be a recognized detail of equipment in all large warships. The value of such an addition is self-evident. Of course, the development of the launching catapult is the factor which has rendered this step easily practicable. In the earlier stages of aircraft carrying by warships the question of launching was regarded as a very serious difficulty. Indeed, it was only possible in a strong wind, say, of at least twenty-five miles an hour. By steaming at full power right into the teeth of this an air current of anything between fifty and sixty miles an hour was created, sufficient to enable the seaplane to lift in the very short run of her resting platform. No fighting ship can provide a run of deck adequate to taking-off in a normal manner. The launching catapult gives a momentum which, coupled with the speed of the ship, enables the aircraft to get away without difficulty. To be sure, advantage is always taken of the wind, and even a ten-knot breeze will greatly facilitate the rising of the machine on receiving its kick-off.

The launching problem, therefore, may be regarded as solved. There remains the much greater difficulty of returning to the ship. In fine weather an airplane can alight upon the water under the lee of a ship and be hoisted in with the derrick. But one cannot count upon fine weather as a condition of maneuvering at sea. In a strong head wind the seaplane will not have an alighting speed much if anything, in excess of the rate at which a very powerful warship could steam into it. But, again, one cannot count upon a strong head wind just when it is needed. The deck of a fighting ship offers very little clear space for the alighting of even the most compact type of seaplane. The aircraft must keep its engine running practically until it comes to rest, otherwise it will "flop." If it were possible to design an aircraft with an alighting speed so low that a warship could keep pace with her the thing would be simple enough. It would only be a question of maneuvering her over her resting place, dropping a line, and hauling her into position. But it is very doubtful whether it will ever be practicable to reduce the landing speed of an aircraft much below fifty miles an hour, and it needs half-a-gale of wind to enable a warship to create the equivalent of an air current of this velocity.

Minelaying

Naval and Military Record, April 11.—It would be interesting to learn just what rôle was assigned to the minelaying cruiser *Adventure* during the recent combined fleet exercises. Did she operate as a minelayer or simply as a cruiser—or both? The reasons which induced the British Admiralty to decide that a surface ship is the most suitable type for minelaying work are far from clear. All the other naval powers have plumped in favor of the submarine for this purpose. At the Portsmouth Navy Yard, New Hampshire, there is now completing for the United States Fleet the *V-4* which is claimed to be the biggest submersible vessel ever yet built. Her surface displacement is 2,878 tons, or about 350 tons more than that of our own *X-1*. She is 381 feet overall and has a maximum beam of 33.8 feet. Her cruising motors will develop 2,800 b.h.p., on which she is expected to do fifteen knots—not an excessive speed for a submarine. She will be armed with one six-inch gun and four torpedo tubes, and is fitted to carry sixty mines.

A cruiser like the *Adventure* can carry many more mines than a submarine; she is far more formidably armed, and is superior by ten knots to the *V-4* in speed. If a minelayer is to be regarded as a fighting ship, the surface cruiser might claim the advantage. But fighting is the last thing in which the minelayer wants to indulge. Her rôle is to do her job as surreptitiously as possible. If she is seen at work, she is advertising the danger to the enemy. A cruiser loaded with mines would be at a terrible disadvantage if attacked, since a single shell might touch-off her freight, with annihilating results. A submarine loaded with mines would not wait to be attacked, and would do her actual work under water.

If the Admiralty visualize long-distance voyages in connection with mine-laying operations, the big surface ship would have a certain degree of advantage, but we cannot help thinking that this would be more than

neutralized by the risk of detection directly she arrived and got to work. Agreed that minelaying is a dirty business; but, if it is to be carried out at all, it may as well be done in the dirtiest way possible, namely, with the utmost secrecy. To try and combine chivalry with dirty work is a profitless compromise. The Germans in the first few days of the war realized that the surface minelayer was a "bad egg." When the *Konigin Luise* was sunk by the third Destroyer Flotilla in the opening round of the sea conflict, they decided that this form of warfare—for which they had made extensive preparations in complete disregard of the Hague Convention—must be done stealthily.

Fleet Maneuvers for Afghan King

London *Times,* April 4.—The several squadrons and flotillas of the Atlantic Fleet sailed before 11:00 A.M., and, except for the *Nelson* and the battle-cruiser *Tiger,* gunnery firing ship, the anchorage was void of large men-of-war, when at about 11:20 A.M. the steam barge carrying King Amanullah was seen approaching the Fleet flagship.

At the time the *Nelson* left harbor at fifteen knots the weather had thickened and the visibility had decreased. For this reason the first event on the program—namely, a submarine attack upon the *Nelson*—had to be cancelled. Soon afterwards, however, as we proceeded southward past the Shambles Shoal, the four destroyers *Thruster, Salmon, Torrid,* and *Rowena,* from the Anti-Submarine School at Portland, which had followed us out of harbor, passed ahead at full speed, presenting a fine spectacle as they drove into the steep sea, pitching heavily, with sheets of spray flying across their forecastles and green seas erupting over their upper decks. The *Nelson* presently altered course to the south-eastward, and at a signal from their leader the destroyers each let go four depth charges, the great gouts of whitened water leaping out of the sea in rapid succession. Such was the piping of the wind, however, that to those in the *Nelson* little more than a mile away the sounds of the explosions were quite inaudible.

The rain was very heavy, but at this time his Majesty was outside his shelter watching the proceedings and talked to Prince George. At about one o'clock, by which time the *Nelson* had altered course to the east, the *Rodney* was in sight ahead, and the rest of the Fleet, except the battle-cruisers, in three columns to the north and north-east. The four battleships of the Third Battle Squadron, led by the *Iron Duke,* were nearest, and turning into line parallel to the *Nelson,* and headed by the four ships of the Second Cruiser Squadron led by *Curacoa,* they fired a royal salute of twenty-one guns. The visibility at this time can hardly have been more than 4,000 yards and was steadily diminishing. It was at about this time that a flying boat circled several times round the *Nelson.*

What would undoubtedly have proved two of the most popular events of the day, the full-caliber firings of the *Rodney* and the battle-cruiser squadron had unfortunately to be canceled owing to the thick weather. The *Hood, Repulse,* and *Renown,* however, went through the program without actually firing, and the sight of these three great ships looming out of the mist ahead and steaming past the *Nelson* at full speed against the wind, with the seas breaking over their forecastles, was a magnificent one, perhaps the most spectacular of the day. It was now past two o'clock, and the royal party, accompanied by the commander-in-chief and official guests, over fifty in all, had luncheon in the wardroom.

An exhibition of flying off and on later in the day by the airplanes belonging to the *Furious* had also to be abandoned owing to the weather, but another spectacular display took place shortly before four o'clock, when destroyers steaming down from ahead rushed past the *Nelson* at a few cables distance firing blank ammunition in a mimic torpedo attack at close range. As a termination of the proceedings it had been intended that airplanes from the *Furious* should attack the *Nelson* with machine guns and dummy bombs, but this again had to be abandoned. Escorted by destroyers the *Nelson* duly arrived at Spithead at six, where at 6:35 his Majesty disembarked in the Southern Railway's paddle steamer *Duchess of Fife,* which flew the Afghan Royal Standard for the occasion. The guard and the band in the *Nelson* were paraded as before, and the ship's company gave three cheers as the King left, a royal salute of twenty-one guns being fired shortly afterwards.

From the purely spectacular point of view the display given by the Royal Navy to King Amanullah undoubtedly lost much of its picturesqueness with the forced abandonment of the submarine attacks, the full caliber firings, and the operations of the naval aircraft from the *Furious*. Nevertheless it was not without its thrilling moments. As an example of successful staff work, moreover, both in the operations of the various units of the Atlantic Fleet and aboard the *Nelson*, where arrangements had to be made for the accommodation and entertainment of a large influx of visitors, it left nothing whatever to be desired. King Amanullah is understood to have expressed his satisfaction before leaving the ship.

The "Royal Oak"—An Editorial

London *Times*, April 7.—Predominant over every opinion about the week's proceedings in Court-martial at Gibraltar, and about the incidents in which they originated, will be the sense of relief and thankfulness that they are ended. The second of the Courts promulgated its findings and sentence on Thursday and was declared dissolved. With this declaration an episode that has profited no public or private interest and remains devoid of significance for the life, organization, and discipline of the Navy as a whole is, or ought to be, taken as complete. The proceedings will now be forwarded to the Admiralty for review in the normal way. Whatever question of personal responsibility may yet remain to be formally established, it is clear—in the circumstances deplorably clear—that the facts, sifted and resifted, contain no question of principle. The search for implications of a larger kind could only prolong vainly what has been prolonged already beyond tolerance and magnify what has been magnified to a preposterous degree. Hardly anyone can have followed the evidence which has been given in the *Royal Oak* case—examination, cross-examination, re-examination, most of the substance of it twice or thrice repeated —without regret and astonishment sharpened by impatience that the elaborate ceremonial and procedure of naval justice should have been engaged by things of so little moment. Once the matters in issue, such as they were, were beyond the compass of a more sensible form of settlement it was, of course, the right of Captain Dewar and Commander Daniel to invoke the test of a court-martial. Quite properly the right was exercised. Once set in motion, it was necessary that the mechanism should be allowed to do its work, as it has done it, without restriction. The patience and thoroughness of these trials are not, on a reading of the fully telegraphed proceedings, open to question, and the findings accord with the admissions of the accused officers themselves.

Commander Daniel was found guilty of the charges that he wrote a letter which was subversive of discipline and a criticism of the conduct of his superior officer, and that he read it aloud to brother-officers in the wardroom. Captain Dewar has been found guilty of an act prejudicial to naval discipline in accepting and forwarding a letter the terms of which were subversive of discipline, though, it is not unimportant to observe, the Court declares not proven the further charge of accepting and forwarding a letter contrary to the King's Regulations and Admiralty Instructions in that it contained criticisms on the conduct of a superior officer. Both officers are sentenced to be severely reprimanded and dismissed their ship. Rear-Admiral Collard, before the trials were instituted, had already been relieved of his command—a penalty which must be without parallel in the recent history of the Navy. This step, Mr. Bridgeman has stated in answer to a question, was approved by the Admiralty after receipt of the minutes of the court of inquiry held at Malta. The immediate upshot is that the careers of three officers of high professional competence have been interrupted, if not broken altogether—a result which again adds to the debits of this most unprofitable affair. The substantial element in both cases was Commander Daniel's letter complaining of Rear-Admiral Collard's conduct and stating his views of its effect upon the discipline of the ship. We have Commander Daniel's own straightforward admission that it was a "peculiar letter" and that he exceeded orders in writing the paragraphs of it which insisted that an uncompromising protest should be made against the Rear-Admiral's behavior and that "apologies would not serve any useful purpose." This "peculiar letter" Captain Dewar forwarded to the Vice-Admiral, and admits that he did not disapprove it. The findings of the two

Courts are sufficiently based upon this evidence. Nor is it necessary to go beyond first-hand evidence for the causes which provoked these two officers in their unhappy course of action. Rear-Admiral Collard's own version of his conduct on the occasion of the dance aboard the *Royal Oak* by no means portrays an officer properly careful of the dignity and obligations of his rank. In short, the admissions of all three parties are enough to explain, though not to excuse, the process by which a succession of undignified trifles has mounted to a portentous height of gravity and publicity. There is no need to rummage through the petty details of the evidence. What it discloses is in essence personal—a clash of temperaments. Such antipathies have existed in a ship before. They are to be found, save by great good fortune, in almost any form of collective enterprise—in a regiment, in a business or factory, even within a household. But somehow or other they are kept within check and subdued to the practical necessities of the day. Naturally self-control and the sense of proportion may be more severely tried in the close quarters of a battleship than in the relative freedom of a shore occupation. Contiguity is the rule, day in and day out, of a society afloat, and if at times it tinmes life with the animosities of Browning's Spanish cloister, they are intelligible. What is novel, rather, about the antipathies that seem to have captured the senior officers of the *Royal Oak* is that, instead of the ship keeping charge of them, they should have taken charge of the ship. An admiral too much given to "choleric word" served by officers too dour or too zealous to keep the passing moment in reasonable perspective, too little gravity on one side and too much solemnity on the other—such seems to be the summary of an episode which has brought the Navy under the humiliating glare of unmerited publicity.

The "interests of the Service" is a phrase that has been much on the lips of those who have appeared before the naval tribunals in these last days. Every one will share Captain Dewar's regret at the unintended consequences which have followed his action. The Navy is the principal, if not the only, victim, and has the first, if not the only, claim upon public sympathy. True, it is not materially affected. Its system has stood the test of investigation. Nothing in this particular case can furnish a grievance against it. Nothing in the evidence given at Gibraltar or in the Courts' conclusions upon it suggests that naval discipline fails to hold an even balance between the abuse of authority and the right of junior officers and ratings to question it. If such complaints there are, there is nothing relevant to them in these proceedings. The right to free ventilation and redress of just grievances must be the backbone of naval as of all intelligent discipline. But neither the right nor its denial is capable of illustration by a case that is primarily sentimental—a complex of jarring personalities. If there is anything to be criticized, it is the unlucky appointment that brought them together—though Captain Dewar's appointment was made after the usual consultation of the Rear-Admiral's preference—and the possibly extreme adherence to formality which has made some ignominious and unusual events on board one ship in the Mediterranean Fleet a topic for the world's discussion. Was it inevitable that a court-martial should adjudicate upon incidents that really required nothing more than tact for their prevention and masterful commonsense for their cure? The Navy has suffered nothing material. But everyone who knows the corporate spirit of the Service and the jealousy with which its good name is guarded will also know what it has had to endure in the indignities which a malign chain of occurrences has brought upon it through no ascertainable fault of its own.

FRANCE

Distantly Controlled Motor Boats

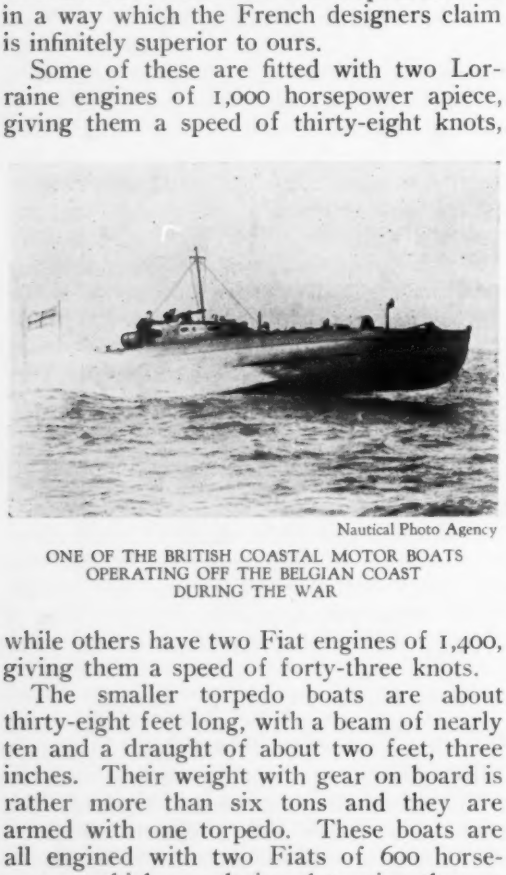
The Merchant Shipping Review, March. —For some time past the French Navy has been carrying out very exhaustive experiments with coastal motor boats and distantly-controlled craft, maneuvering them quite easily by wireless from any reasonable distance and regulating the engine in the same way. In appearance they are almost exactly like our own coastal motor boats except that they have a mast as far forward and another as far aft as possible, between which are stretched the wireless aërials.

These boats are being built in various designs, some of which are extraordinarily

interesting. The most important designs are as follows:

To begin with there are three types of torpedo-carrying boats very much after the fashion of our own coastal motor boats. Two of these types differ only in their engines; the third is smaller. The bigger hull has a length of rather more than fifty-four feet, a beam of eleven feet, three inches, and a draught of just under three feet. The weight of the hull machinery, with stores on board, is rather more than thirteen tons, and each deck is armed with two torpedoes fired in a way which the French designers claim is infinitely superior to ours.

Some of these are fitted with two Lorraine engines of 1,000 horsepower apiece, giving them a speed of thirty-eight knots,



Nautical Photo Agency

ONE OF THE BRITISH COASTAL MOTOR BOATS OPERATING OFF THE BELGIAN COAST DURING THE WAR

while others have two Fiat engines of 1,400, giving them a speed of forty-three knots.

The smaller torpedo boats are about thirty-eight feet long, with a beam of nearly ten and a draught of about two feet, three inches. Their weight with gear on board is rather more than six tons and they are armed with one torpedo. These boats are all engined with two Fiats of 600 horsepower, which are designed to give them a speed of thirty-seven knots.

Then there are two classes of minelayers, again differing only in their machinery and speed. Each carries twelve mines and weighs between fourteen and fifteen tons, on dimensions fifty feet by eleven. The first type is to get thirty-seven knots out of two 1,000 horsepower Lorraine engines, and the second type forty-two knots out of two 1,400 horsepower Fiat.

Most interesting, however, are the explosive boats, which are designed much on the lines of the German infernal machines which attempted to blow up Nieuport Pier and the British Monitor *Erebus*. These machines were controlled by colossal lengths of piano wire, after the fashion of the old Brennan torpedo, but the new French boats are of course controlled by wireless. Their hulls and engines are identical with the smaller torpedo-carrying boats, but into their bow is packed over fifteen hundred-weight of high explosive, detonated when the boat hits its mark.

All but the explosive boats have dual controls so that they can be manned in the ordinary way and handled from on board. It is expected that the torpedo-carrying boats will generally be used in this way, for it was found during the war that firing a torpedo from the bow of the boat was most unsatisfactory, and from the stern, required very expert handling and a beautiful judgment of time. On the other hand the minelayers will be used without crews more often than not, and are capable of doing infinite damage.

There is not the least difficulty in steering these boats by wireless, for both the British and American Navies have fitted obsolete battleships with this gear and have maneuvered them from a destroyer miles away with perfect ease. At the same time it is quite possible to jam this wireless when it is detected and to throw the boat out of gear.

Naval Notes

The Engineer, April 13.—Statements which have been made of late indicate clearly the attitude of the French Navy towards the various proposals for reducing still further naval armaments. The British idea of limiting the tonnage of battleships to 30,000 tons, of lengthening their life and lowering the maximum caliber of guns meets with French approval, but their interest in the proposal is attenuated by the fact that France is really not in a position to build battleships of that tonnage. Apart from the cost which renders the construction of battleships undesirable at a time when the whole available resources must be devoted to the reconstitution of a light and powerful mobile fleet, there are no dockyards in France where it is possible to build

battleships even of 30,000 tons. It is only just possible to build the 10,000-ton cruisers. It was expected that Parliament would have voted the funds for the proposed reconstruction of the arsenal at Brest, where it is intended to provide means for building larger vessels, if necessary; but the project could not be discussed before the dissolution of Parliament, and it is therefore likely to be deferred for a considerable time. For the moment there is no question of building new battleships, and the entire resources are being concentrated upon a fleet of light vessels which it is intended to make as efficient and powerful as possible. The French program institutes a new policy of opposing a mobile fleet of numerous small vessels to the heavily armed fleets of other Powers. It is a development of the policy formulated by Admiral Aube about thirty years ago, when the introduction of the submarine led him to believe that future naval strategy would be entirely changed by the supposed irresistible attacks of a considerable number of small and partly invisible vessels. The French do not place too much reliance upon the effective power of attack, and regard the new fleet more as an instrument of defense; but the results obtained with the new cruisers are modifying their views on this point to the extent that an extreme mobility is expected, partly, at least, to make up for an inferior armament. The new French Navy is largely in the nature of an experiment. The object is to combine speed with power. The *Tourville* has attained thirty-six knots on trials. The destroyers have become small cruisers, and the bigger submarines have a considerable cruising range. Any one of these vessels could be sunk by a single broadside from the modern battleship, but the mobility of the new cruisers is expected to minimize the risk of being hit, while the main idea of attack on heavily armed vessels is a concentrated fire of torpedoes. So long as the French have faith in the efficiency of the new navy, they will not take part in any discussion that aims at a reduction or restriction of light craft or their armament. They intend to preserve absolute liberty in carrying out the naval program.

New Cruiser Speed Record

New York *Times,* April 3.—The *Tourville,* the new 10,000-ton French cruiser, has just established a new world speed record, according to an announcement by the French Ministry of Marine. With her eight boilers under full pressure and with a heavy sea running, the latest addition to the French navy attained a speed of 36.15 knots.

The *Tourville* developed 13,000 horsepower in her turbines and raced through the sea one full knot faster than the time recently made by the *Duquesne.*

The *Tourville's* seaworthiness tests, made during a storm, also proved highly successful.

UNITED STATES

Safety Devices on V-4

New York *Times,* April 11.—The newly commissioned submarine *V-4,* which is the largest in the world, embodies 104 safety devices as compared with 85 on the *S-4* that met with disaster with all hands off Provincetown last December.

All the devices on the *V-4* were installed long before the *S-4* disaster, and the increase in their number, according to naval officials was made possible by the larger size of ship. In a craft so delicately adjusted for buoyancy as a submarine every pound of weight counts and addition of equipment presents serious problems.

Had some of the new safety devices on the *V-4* been installed in the *S-4,* it was added, more essential devices would have had to be discarded.

Among the most valuable additions to the *V-4's* safety equipment are two escape hatches, at bow and stern, opening on the deck but under bell-shaped air domes.

Two men at a time can emerge from the interior of the ship to the bell chamber, close the hatch after them, let water in slowly through a valve until the air pressure within stops its rise and then open a door on the side of the tower and swim for the surface.

Controls inside the ship make it possible for the operation to be repeated until the last man has escaped.

Another innovation is in the control system by which all hatches can be operated from outside or inside the ship. By this system, it is believed, in a grave emergency divers could enter a compartment and start pumping machinery to raise the ship with its men.

Other new devices include individual air-

blowing lines that reach to all sections of the submarine and can be utilized for getting air and liquid food to men in different compartments, fresh water connections in each compartment and hydraulic storage of gasoline by which the danger of fire or explosion is expected to be greatly lessened.

The Gunnery Gyro-Compass

The Sperryscope, April.—Experts in naval ordnance have for the past ten year recognized the need of a gyro-compass especially designed to fulfill a number of very exacting requirements for gunnery purposes in addition to being an accurate and reliable navigating compass.

Existing types of Sperry gyro-compasses have proven their worth to the navigator under every maritime flag, on all types of vessels and under almost every imaginable condition of service, but the naval ordnance expert wants more. He wants a compass with an accuracy that can be used to hold a gun on an invisible target at a range of 30,000 yards and a repeater or transmission system that is able to transmit such accuracy, to the gun controls.

Realizing the importance of the problem, our engineering organization undertook the development of a gyro-compass to fulfill the most exacting ordnance demands of the modern battleship and cruiser. Our MK. X or gunner compass is the result of this undertaking. The first equipment of this type is installed on the U.S.S. *New York* and comprises duplicate master compasses, motor generators and control panels. The results being obtained from this first equipment amply justify the years of intensive research and development work which our organization has given it.

As a preliminary to the development of this compass numerous experiments were carried out on liquid and magnetic suspensions as well as various other departures from our previous types of designs in an endeavor to ascertain whether or not any of these departures might be of value in obtaining greater accuracy. These experiments proved beyond question that the best basis for the new design was to be found in the mechanical suspension and mercury ballistic of our previous designs. The mechanical suspension permits the use of a very heavy wheel and therefore makes it possible to obtain the very high directive force which is necessary for the accuracy required in the gunnery compass. The mercury ballistic makes possible a perfectly nonpendulous gyro and therefore eliminates all inter-cardinal rolling error. Moreover, the use of a single gyro with mechanical suspension and mercury ballistic makes possible a simple, accessible and rugged construction well suited to ship-board use.

The general form of the MK. X Compass is therefore somewhat similar to the MK. VIII type. The directive force of the MK. X is, however, over six times that of our MK. VIII. This great directive force, which is necessary to obtain the high degree of accuracy required in the gunnery compass, is obtained by the use of a 125-pound gyro-wheel revolving at 10,000 revolutions per minute. Every item of construction has received the most careful consideration and consequently the MK. X has little or nothing in common with our previous designs in anything except principle and general form.

Special effort has been devoted to ruggedness, simplicity and accessibility of construction. This we regard as of special importance to naval vessels, since they must operate at great distances from navy yards and bases and any apparatus used on them should therefore be so constructed that the ship's personnel can get to every part to clean it, oil it, remove it, or replace it if necessary.

The repeater or transmission system is of the alternating current, self-synchronous type and is so designed that readings of one-half minute of arc are readily obtained. The follow-up system in the master compass is designed to give a hunting motion of absolute uniformity so that the usual small lag between the sensitive element and the transmitter is eliminated. The transmitter is capable of operating fifty or more repeaters without over-loading.

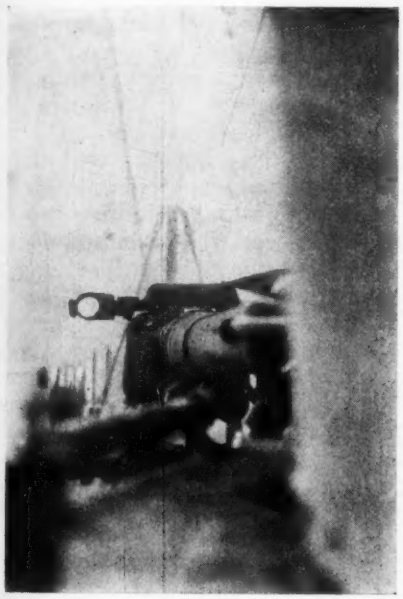
The bearing or alidade repeater is of a new and interesting design. The repeater card is operated by a servo or azimuth motor in very much the same manner as the master compass card, thus making it possible to mount a telescopic sight directly on the repeater compass card. The operator can therefore take bearings of either celestial bodies or terrestrial objects without being troubled with the yawing of the vessel. A rough and a micrometer adjustment are

provided for traversing the telescopic alidade over the surface of the dial. A vernier scale conveniently mounted for obtaining accurate readings in relation to true north and also the ship's head, is also provided.

Ships of war are constructed and equipped with a view to obtaining the utmost effectiveness in the short space of time of a modern naval action. During these moments of kaleidoscopic activity and lightning-like change of situation, it is of utmost importance that all apparatus function as nearly automatically as possible and with a minimum of time and attention on the part of the personnel. The MK. X compass has been designed to fulfill these requirements.

Photograph Taken Fifty Feet Under Water

Contributed by Lieutenant (j.g.) Harry Saunders, U.S.N.—It is possible with proper apparatus and favorable conditions



A DECK VIEW FIFTY FEET UNDER WATER

to obtain under water photographs of surprising clearness. There has been developed, in fact, a means of supplying artificial light to submerged photographers which has made possible the taking of excellent pictures on the ocean floor.

The accompanying picture, however, was taken through one of the conning tower eye ports of an R-type submarine at a depth of fifty feet. The boat dove at a point about ten miles off the coast of Molokai on a bright and sunny afternoon. The camera used was one of the small vest pocket types; a time exposure of twelve seconds was guessed to be approximately correct.

The black object in the center of the picture is the 3-inch gun, muzzle end toward the camera. Forward of the gun can be seen the torpedo loading derrick. The blur on the right is a fairwater just forward of the conning tower and the triangular black spot in the lower right hand corner is the recess for the forward battery ventilation exhaust valve. The streaks in the upper part of the picture are the submerged antenna to port, and the flat top antenna, which is, of course, rigged down while the boat is submerged. The prominent cylindrical object on the gun's left is a hand railing on the fairwater above which may be seen the gun training hand-wheel and the port life rail.

MERCHANT MARINE

The Compromise Bill

Nautical Gazette, April 14.—The final draft of the most constructive piece of shipping legislation in the history of the country has just been completed by the House Committee on Merchant Marine and Fisheries, and it is expected that it will receive favorable action, not only from the House and Senate, but from President Coolidge, who is known to favor private operation. If one is to judge from the statements made by shipping experts in the past eight years, the dream of a privately-operated American merchant marine is about to be realized.

All in all, the compromise bill is a good one. A close study of the measure convinces one that the House Committee, under the able leadership of Representative Wallace H. White of Maine, went about its task in a businesslike way, and after many weeks of careful discussion drafted the measure to aid private American operators in a way that will be acceptable to the people of the United States.

Outstanding among the many features included in the bill is the one providing for the Shipping Board to maintain essential trade routes and replace the ships thus engaged until such time as they can be taken over by private interests. This will satisfy the proponents of Government operation.

With Government operation disposed of, the measure proceeds rapidly to providing aid for private operators. This aid includes liberalizing the Construction Loan Fund of the Shipping Board's construction loan fund so that an American shipbuilder may borrow up to seventy-five per cent of the cost of a vessel in an American yard. If the ship is to be operated in foreign trade the loan will bear an interest rate of one-eighth of one per cent over that paid by the Government; if intended for coastwise operation the loan will carry an interest of five and three-quarters per cent.

The loan fund is also to be increased from $125,000,000 to $250,000,000, and loans may be made for a period of twenty years. This feature makes possible the Transoceanic Lines' plan to borrow $94,500,000 to build six lines capable of crossing the Atlantic in four days flat. Although this plan has made considerable headway in Washington, Mr. Laurence R. Wilder, who is behind this project, will have to convince the Shipping Board that he has raised $50,000,000 from private sources with which to help launch the new company.

Increased compensation for ocean mail service has also been carefully worked out in order to pay a flat rate per nautical mile to ships, based on their respective speeds. Ships capable of maintaining a speed of ten knots will receive from $1.50 to $2.50 a mile; ships of thirteen knots $4.00 a mile; ships of sixteen knots $6.00 a mile; ships of eighteen knots $8.00 a mile; ships of twenty knots $10 a mile; ships of twenty-four knots $12 a mile. The Postmaster General is authorized to enter into special contracts with owners of ships making in excess of twenty-four knots on the same ratio as the rate being paid to 24-knot ships. This provision would naturally aid the Transoceanic Company, which hopes to carry the lion's share of the United States mails to Europe, with ships of a speed ranging from thirty to thirty-five knots.

One paragraph in connection with mail contracts states that the vessels to be employed in the mail service must be American-built, under the laws of the United States during the entire time of such employment, or registered under the laws of the United States not later than February 1, 1928. This allows two new Grace liners, which are just being completed in British shipyards, to benefit by the increased payment for carrying United States mails. These two ships will leave England shortly to take their place in the New York-West Coast of South American trade. They will fly the American flag.

Then there is the provision under which United States naval officers may volunteer for service on any vessel employed in mail service and receive half pay from the Government, exclusive of allowances and such other compensation as may be agreed upon from the owner or master. If we read this clearly we believe that such a provision may bring a storm of protests from labor leaders, as it means that in the event of merchant officers striking for just grievances the shipowners could appeal to the Navy Department for the necessary officers to man his ships, on the grounds that the vessel is engaged in the carriage of United States mails. According to the wording of this paragraph the navy could furnish deck and engine-room officers to private owners who would only have to give them half pay. We do not believe this is the intent of the bill, but it should be clarified.

Although it was not expected that the House Committee would include any feature of marine insurance in the draft, such a feature has been written in and definitely places the Government in the insurance business. Under the terms of the proposed bill the Shipping Board may create out of insurance premiums and revenue from operations and sales, and maintain a separate insurance fund which it may use to insure, in whole or in part, against all hazards commonly covered by insurance policies in such cases, any legal or equitable interest of the United States (1) in any vessel constructed or in process of construction, (2) in any plants or property in the possession or under the authority of the Board.

The United States shall be held to have such an interest in any vessel toward the construction, reconditioning, remodeling, improving, or equipping of which a loan has been made under the authority of this Act, in any vessel upon which it holds a mortgage or lien of any character, or in any vessel which is obligated by contract with the owner to perform any service on behalf of the United States, to the extent of the Government's interest therein.

In other words, the Government can in-

sure every ship built by private interests in American yards if the owners take advantage of the Shipping Board's construction loan fund, which they will naturally do because of its liberal terms. This feature will bear watching. We wonder if the insurance interests will oppose it.

Most important of all is the short paragraph in the bill which reads: "The appropriations necessary to carry out the provisions and accomplish the purpose of this Act are hereby authorized." Many bills, with excellent intentions, have been enacted in the past, but they failed of their purpose due to the failure of Congress to vote the necessary appropriations to make them operative.

Shipping Board Reports Adversely on Transoceanic Corporation

Washington *Post*, April 28.—The Shipping Board has rendered an adverse report to the Senate on the proposal of the Transoceanic Corporation to establish a line of six thirty-three-knot passenger steamers designed to cross the Atlantic in four days. The project, in the opinion of the Shipping Board, is "technically open to criticism, economically unsound and financially nebulous."

It will be remembered that the Transoceanic Corporation approached the Shipping Board some time ago asking that it declare the proposed line a necessary service under the terms of the shipping act of 1920 and that it liberalize its construction loan fund so that money might be advanced for building ships up to three-fourths of their costs at current Government interest rates. In addition, the corporation proposed that terms of the mail subvention clause be broadened so that it would be assured of financial aid in operation from that source. It was believed in some quarters after the hearings had been concluded that the corporation had made a good case. The Shipping Board report indicates that it did not.

There can be no question that the idea of operating fast transoceanic shipping services is fundamentally sound. Ships that have a quicker "turn around" and consume fewer hours in the crossing would be productive over a greater portion of the year than ships now in use. Economically they should be able to justify their greater cost both from the construction and the operating standpoints. Yankee windjammers of another day, sailing in all sorts of weather under full sail, because of the fact that they provided express service as compared with the ships flying other flags whose skippers were not as daring, were able to command the cream of the ocean trade. Fast ships today would swiftly rebuild America's lost prestige on the high seas.

The Shipping Board report brings disappointment to those who had hoped that the Transoceanic Corporation project might mark the reëstablishment of America as a shipping power. It may be that the Transoceanic Corporation can change its plans so that they will gain official approval. The report says in part:

> The plans of the vessel submitted are inadequate and incomplete. No margin has been allowed either with respect to power required or the strength of the vessel.
>
> The vessels projected will not be able to maintain a sea speed of thirty-three knots on the power contemplated. The cost of the vessels will be in excess of the estimate submitted, since the size must be increased and since the original estimate was too low.
>
> The Transoceanic Corporation has declined to submit any data with respect to its financial condition or its plans for future financing. An analysis of the expected revenues and expenses discloses that the figures presented by the Transoceanic Corporation are incorrect and that the revenues are much smaller and the expenses much greater than anticipated by the corporation.

The board's report was made up by one set of engineers; the Transoceanic Corporation's by another. There always is the possibility of course, that either or both may have been inaccurate in one respect or another. In any event, it does seem that the Transoceanic Corporation should be able to redraft its proposal so that it would meet with approval, particularly since the Shipping Board in its report reiterates its faith in the possibilities of high-speed ocean vessels. In the meantime, the general provisions that the Transoceanic Corporation suggested to the Shipping Board have been included in an amendment which will be offered to the pending bill. If this amendment should be accepted, the Transoceanic Corporation will have an opportunity to demonstrate that its project is sound.

Projected 1,000-Foot British Liners

New York *Times*, April 6.—British shipping interests expect to have two 1,000-foot twenty-eight-knot liners operating in the

transatlantic service by the summer of 1931. Within two months, the keel of the first of these, which the White Star Line has ordered at a cost of $25,000,000, will be laid down in the Harland and Wolfe Shipyard at Belfast. Meanwhile the Cunard Line is negotiating with the directors of Brown's Shipyard, the Clydebank builders of the *Lusitania,* for the construction of a ship approximately the same size as the new White Star liner.

The latter vessel will be just 1,000 feet long, have a beam of 110 feet and gross tonnage of 55,000. Her maximum speed of twenty-eight knots should enable her to maintain a cruising speed of twenty-six knots in good weather. Her motor power will be turboelectric, similar to the Panama Pacific liner *California,* with estimated horse-power of 150,000 superheated dry steam.

AVIATION

Captain Wilkins' Polar Flight

New York *Times,* April 23.—By CAPTAIN GEORGE H. WILKINS, Copyright, 1928, by the New York *Times* Company, Wireless to the New York *Times.* Green Harbor, Svalbard, April 23.—To illustrate the description relating to physical conditions observed on our polar flight, draw on the polar

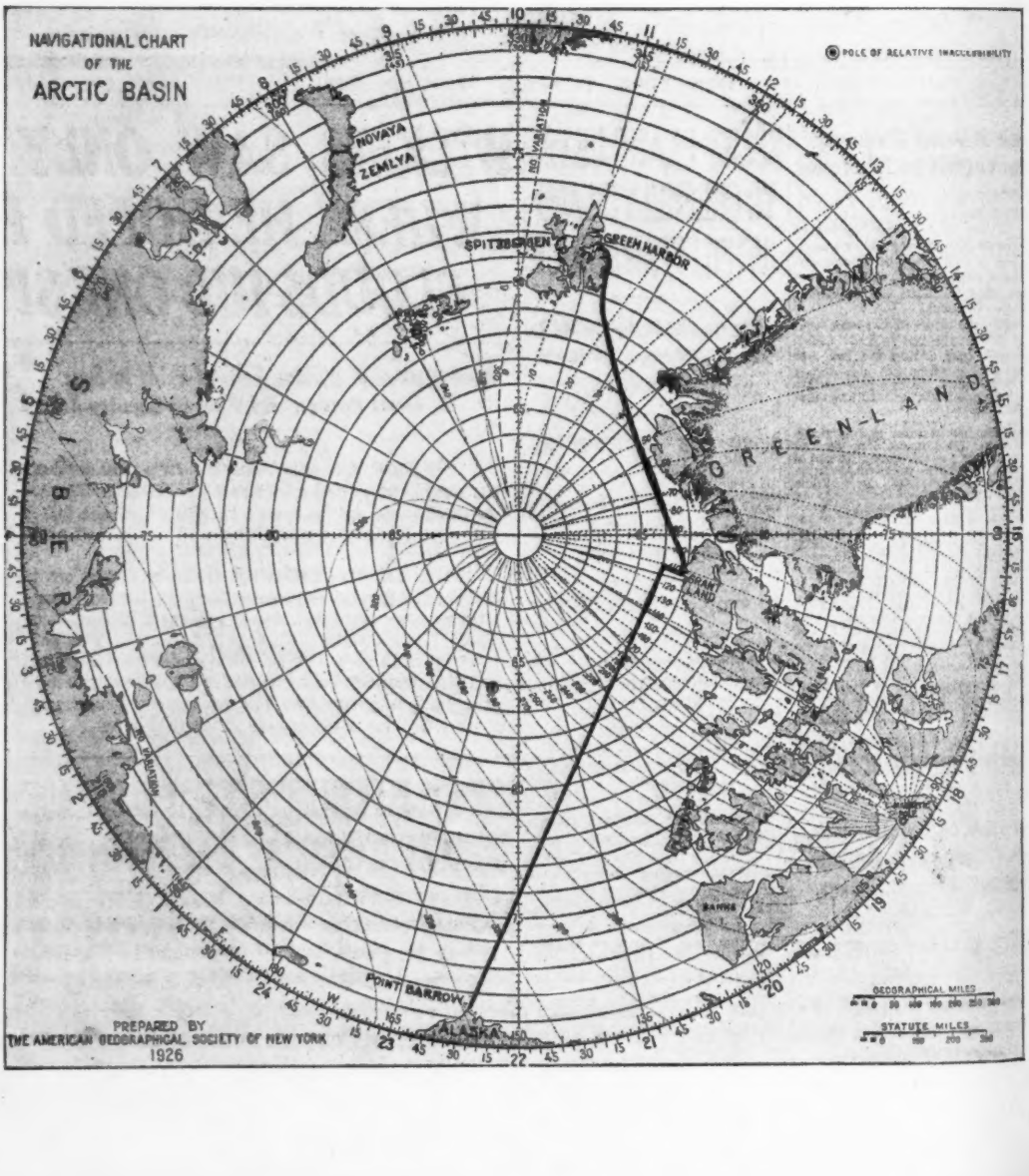


chart a course from Point Barrow to longitude 75, latitude 84, thence to Spitzbergen.

Indicating ice conditions at Point Barrow there were low tundra snow drifts, running east and west. Near Point Barrow on the Arctic ice there was a high pressure ridge near the shore. Then following the course to latitude 72 there was ice pack and scattered open water leads, running east and west and turning southwest of Barrow.

From latitude 72 to latitude 73 there was a high rough pack ice, and a few narrow leads running east and west, and turning to the northward left of the course. There were snow drifts running northeast and southwest. From there to latitude 75 there was old, rough ice, no leads, and snow drifts running east and west.

Thence to latitude 77 there was much young ice, lately frozen, making good landing fields with no snow. [This was apparently the only place Captain Wilkins saw on his whole flight where a landing was possible.]

Then to latitude 78 there was heavy, old ice, with high pressure ridges, and high snow drifts. The direction of the snow drifts suddenly changed to northwest and southeast. From latitude 78 to 80 we were over the clouds.

From latitude 80 to 82 there was very old, rounded pack ice, glistening and clear on top. There were a few cracks but no open water was seen, and the snow drifts ran from east to west. From there to latitude 83 there was moderately rough ice, snow drifts running northwest and southeast.

Then to latitude 84 there was light pack ice, much broken and pressed. The next hundred miles were over clouds. From longitude 75, latitude 84, due east to Grant Land there were wide leads running east and west, with pressure ridges on both sides.

Near Greenland the ice was in very irregular ridges, with confused snow drifts. Between longtitude 30 to zero there were many narrow leads running east and west, young ice with no ridges, and snow drifts running north and south. On the course between zero and Spitzbergen there were light billowy clouds and covered scattered ice.

To illustrate the wind experience, using zero for calm and light dark arrows for low and high wind: For the first fifty miles on the course, light winds from the east; next 200 miles, very light northeast winds; next 250 miles, light, gradually darkening, southeast changing to due south; next 200 miles over clouds; next 200 miles light at first, increasing to very dark, from northwest; north of Grant Land above the clouds; from longitude 60, latitude 85, dark to very dark on the course with us until clouds were reached 200 miles from Spitzbergen, obscuring the view.

The Upside-Down Outside Loop—and Others

U. S. Air Services, April.—By LIEUTENANT A. J. WILLIAMS, U.S.N.—I became interested in inverted flying, in 1919, and found that this field of acrobatics was likely to prove fruitful and interesting. The scope of material activities at that time was limited by the type of machine available and lack of information.

The first item of interest which absorbed my attention was the manipulation of controls while flying in the inverted position. The acquirement of a clear picture as to control movements necessary to complete a maneuver was attributable to the practice of using a small scale model to which cardboard ailerons, elevators, and rudder were attached. The custom of utilizing the visual demonstration method of the model controls prior to the actual attempt in the air saved much time and avoided staggering into and out of uncomfortable attitudes.

The type of plane available in 1919 for acrobatics was possessed of certain handicaps such as under power and lack of performance. My early experiments with upside down flying led me into a few interesting positions, including incipient inverted tail spins. These experiences resulted from efforts to assume a minimum upside down gliding angle plus unfamiliarity with the use of the reversed aileron controls. At first it was sufficient to be able to glide in a straight line, upside down. Later on it was found that an upside down spiral from five or six thousand feet added quite a bit of interest to the day's work. These maneuvers are now quite simple due to the marvelous performance and ample factors of safety which distinguish our service single-seat fighting ships. Quite a big difference from attempting the same evolutions in an N-9 seaplane.

With the advent of the present type of single seat machines of 1922, which are strong and possessed of excellent performance and maneuverability, the pilot's ambitions towards unusual acrobatics were gratified and his scope of gyrations greatly enlarged.

It is safe to assume, and wise to note, that before attempting extensive experiments involving inverted flying, positive assurance should be obtained that the airplane to be used for such work is possessed of ample factors of safety and capable of assuming reversed wing loading to 4 G.

About a year ago, while experimenting with a Navy fighting ship at Washington, I conceived the idea of making an inverted barrel roll, snap type. (The difference must be noted between the slow barrel roll, through which the ship must be flown all the way, where the axial wing travel is comparatively slow, and the snap barrel roll where the initial impulse is of sufficient force to throw the plane through the full 360 degrees.)

A snap barrel roll is a roll which is started from the normal upright flying position or from the inverted upside down start. And to clarify the picture it may be well to note the effect on the pilot during both evolutions from the angle of separate forces. In the snap barrel roll, started from the normal upright position, the pilot is forced down against the seat by the centripetal force and could make this type of roll without the aid of a belt. It must be assumed, however, that this last statement will hold only where the maneuver is perfectly executed. And where the snap barrel roll is started by first placing the ship and pilot upside down, centrifugal force tends to throw the pilot clear of the ship and exerts great strain against the safety belt. The last described maneuver is the inverted snap barrel roll.

This maneuver was started from the upside down position at about 130 m.p.h. The controls were suddenly and with considerable force placed in such a position as would have resulted in an inverted spin had the control movement been slow and gradual, accompanied by a loss of speed. The plane traveled from the upside down start through normal to the inverted position. The motion was sharp and was completed with a snap. An additional half roll was tacked on the original inverted roll; starting from upside down (speed 140 m.p.h.) through normal, through upside down to normal (right side up) flight. This was the inverted roll and a half.

Later, another addition was made to this evolution and a double inverted roll accomplished. The last version was started from the upside down position at 140 m.p.h. through normal, through inverted, through normal to upside down level flight. The control movements for this type of barrel roll are entirely different from the slow barrel roll and the plane movement is fast and the entire maneuver completed in a single "whip."

In the hunt for something new, I decided to go to work on the outside loop and find out what it was all about Lieutenant Doolittle had made an outside loop some time ago. This was the first time that anyone had started such a maneuver from normal flight, down around the circle and up to normal flight again. I read of his effort with the keenest interest and appreciation, and I decided to learn something about the evolution for my own benefit.

On Friday, February 17, 1928, I installed a second safety belt on a Navy Curtiss *Hawk*, powered with the Pratt and Whitney *Wasp* engine and checked the ship over very carefully, intending to attempt an outside loop next day and also perhaps an additional experiment. At that time operations would have been suspended for the week-end and there would be no spectators who might very likely get a fine chance to laugh at an ariplane and pilot tumbling and clowning in the sky.

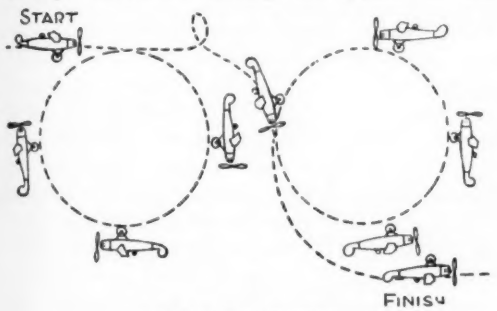
Taking the normal right side up loop as the basis of all forms and variations of loops, we find that the loop is started at the bottom of a circle and concluded again at the bottom of the circle, with the pilot inside the flight path. This suggested an idea. Why not make an outside loop, where the pilot would be on the outside of the flight path and the lift reverse on the wings, to be begun at the bottom of the circle and end there, and wherein all conditions of the normal loop are reversed? The following maneuver was attempted and accomplished:

Altitude 3,500 feet. The plane was half rolled to the inverted position at about 150 miles an hour and while inverted the speed was increased, the stick was pushed forward

slowly forcing the plane's nose straight up from the immediate horizon across the sky to the opposite horizon and then on down and back to the original horizon.

During this maneuver the strain against the waist belts was considerable. Upon the completion of the first attempt, I was troubled by a slight bleeding from the nose and other normal reactions as might be expected, such as impaired vision and congested head.

A landing was made and while the ship was being inspected I planned the next maneuver, an outside loop from the normal starting position, and also worked out a scheme for combining the outside loop which had just been successful with the contemplated outside loop to form a figure eight. The first attempt at the outside loop from the normal start was successful. I started at about 3,700 feet, pushed the stick slowly forward forcing the plane to the



A HORIZONTAL "EIGHT"

upside down position and then on up the other side of the circle to the relative starting point. During the downward travel a speed of about 250 m.p.h. was indicated by the airspeed meter. This speed was attained when the plane reached the upside down position just prior to the climb up the opposite side of the loop.

An effort was then made to accomplish the figure of eight composed of two outside loops, one started from normal flight and the other from the inverted start. An outside loop was started from normal flight and completed, and as the plane was going down and on its way around again a half roll placed the ship on its back and another loop was effected—starting from the inverted position, completing a maneuver as illustrated by the accompanying diagram.

(The drawing shows how Lieutenant Williams, Navy speed pilot, executed a horizontal "eight," recently, over the Naval Air Station by making an outside loop from a normal starting position and a second outside loop, starting with the plane upside down, and finshing in that attitude.)

It had been my ambition to install recording instruments in this plane, make these maneuvers, and get definite figures as to the stresses and strains to which a plane might be subjected during such evolutions. So the plane was flown to Langley Field and a three-component recording accelerometer and recording altimeter and airspeed meter were installed. The National Advisory Committee for Aëronautics lent and installed these instruments and sent a representative to Washington to attend the tests.

Specifications of the Bremen

Aviation, April 23.—The *Bremen* is an all duralumin monoplane with unbraced tapering cantilever wings set at the bottom of the fuselage with a large dihedral. The power plant is a Junkers L-5 280-310 h.p. engine, and is located at the front of the fuselage with a Junkers adjustable duralumin propeller having a center line located above the wing, with slipstream disturbed as little as possible.

The monoplane is a stock model craft designed for freight and mail transport. The pilot sits directly behind the engine, and the mail or frieght compartment of 123.5 cu. ft. is located behind the pilot's cockpit and is connected with the same by a door. The fuselage is constructed entirely of duralumin covered with corrugated sheet metal skin.

The wings and tail of the craft are internally braced, constructed entirely of duralumin with tubular spars and tetrahedral bracing of Z-section struts, and are covered with corrugated duralumin sheeting.

The Junkers L-5 engine develops 310 h.p. at 1,500 r.p.m. It is a six-cylinder in-line water cooled engine weighing 695 lb. without propeller, hub, water, oil, or exhaust manifold. It has a bore and stroke of 6.3 in. by 7.5 in.

The general specifications of this type of Junkers—the J-33-L—are:

Span	58 ft. 6 in.
Length	34 ft. 6 in.
Height	9 ft. 6 in.
Weight empty	2,640 lb.
Normal useful load	1,990 lb.
Normal weight loaded	4,630 lb.

Weight for flight	8,140 lb.
Area of wing	463 sq. ft.
High speed	123 m.p.h.
Cruising speed	97 m.p.h.
Landing speed	53 m.p.h.
Climb from 3,280 ft. to 6,560 ft. (1,000 to 2,000 m.)	5 min.
Ceiling (without altitude control)	19,000 ft.
Fuel consumption (without gas economizer)	485 lb./h.p./hr.
Oil consumption	6.6 lb./hr.

Flight Training to Combat Fog

New York *Times,* April 26.—Experiments which the Farman brothers are conducting at Le Bourget Field, simulating conditions that aviators might encounter in flying through snowstorms and dense fogs, were believed by Henry Farman to have accounted for the failure of so many crack European fliers who have attempted the westward transatlantic flight.

During the last three months more than fifty of the leading French aviators have been subjected to the Farman test, which consists of covering the flier completely with a hood so that he sees nothing but the instrument board and is compelled to fly solely by his instruments.

In every case [declared Henri Farman] we found that, theoretically, aviators cracked up. In other words, the tests proved that, no matter how skillful these aviators were or how used to night flying, when it came to flying through heavy fogs and snowstorms where there were no landmarks to guide them, they were unable to keep the planes on an even keel.

Invariably, during the first test, the accompanying pilot who was not covered was compelled to right the plane which was furnished with dual controls in order to avert a crash.

But after several attempts, we found that fliers became accustomed to handling a plane with instruments as their only guide. On several occasions they looped the loop, barrel-rolled and went through all manner of acrobatics, always bringing the plane back to normal flying position and the proper direction.

Farman declared that he thought these tests might prove useful to Commander Byrd in preparing for his Antarctic trip. He said he was willing to place all data concerning the tests at the disposal of Byrd if the latter was interested.

I am convinced [he said] Byrd will find that it is to his interest to make these tests. I myself have done a great deal of night flying, but there is always a star or the lights of some village by which to guide myself. But I have found, where the flier is completely enshrouded by a heavy fog and unable to see beyond the cockpit, no matter how much experience he has had unless he is accustomed to flying entirely by instruments, he will find it difficult to keep an even keel.

Farman also described experiments which are being conducted by Colonel Loth of the French Army, who is endeavoring to perfect a system which will enable planes to land safely during a fog.

The main difficulty which has been encountered thus far is in perfecting a device which will enable us to tell the exact distance of the plane from the ground. Through a series of charged wires, stretched along the ground, Loth is able to give the direction of the field but the main thing is to enable aviators to make soundings so that they may be able to tell exactly how high they are flying above the field.

The question of position is not so difficult to solve. For more than five years, big European airways have been able to give their aviators their exact position through the use of the wireless telephone. Thus, one of our fliers bound for Paris and encountering fog over Calais may inquire, "Where am I?" Wireless operators in London and Paris are able to pick up his position by determining where their rays cross and can figure an angle to give the flier his exact position.

Farman said that while Loth had made some progress toward developing a system which would enable aviators to take soundings, altitude work thus far was a long way from perfection. Loth, he said, proposed to run a loop of charged wires from London to Paris whereby aviators might be able to guide their planes through the use of wireless instruments, but airplanes rejected this proposal, believing the present system of wireless telephone to be more practicable.

Superchargers for All Wright Engines

Aviation, April 23.—Announcement has been made by the General Electric Company that specially designed superchargers the company has developed will be built into three new types of Wright aircraft engines as standard equipment. Experiments with the new engines are now being carried on by the Wright Aëronautical Corporation in its test laboratories at Paterson, New Jersey. Maximum efficiency of operation, easier starting, greater reliability, and better performance at high altitudes are expected of the engines with the use of the supercharger.

Superchargers have been in frequent use on airplanes ever since the war, but applications have been few and principally on aircraft designed for high altitude flights. The practice in the past has largely been to modify standard engines to accommodate an external supercharger, but the rapid advance in research which has taken place in the

past few years has resulted in the design of a supercharger which is now being adopted by all leading airplane manufacturers in this country for engines in sizes up to about 600 h.p. This device is made a unit part of the engine.

It was a direct result of the use of these superchargers that a new type of airplane engine was developed, utilizing air cooling, equipped with radial cylinders, and having a supercharger built in as an essential item of the engine construction. The supercharger is primarily designed to improve the gasoline distribution and to give a small amount of supercharging when flying near sea level. In most cases, however, it is so arranged that it can be used to maintain sea level power when flying at moderate altitudes. Thus, by maintaining sea level conditions at the engine inlet, airplane engines can develop much higher power at any given altitude than was possible without the supercharger. This makes it possible to carry heavier loads and develop higher speeds.

Superchargers on radial engines consist of a high speed impeller driven by the engine shaft through gears surrounded by air conduits of the proper shape formed as part of the engine crankcase. The only extra parts, therefore, are the comparatively small impeller and a pair of gears.

A piece concerning the new 140, 200, and 300 h.p. Wright Company engines which will use the General Electric supercharger was published in the March 26 issue of *Aviation*.

Bird-Like Airplane Under Test

New York *Times*, April 25.—George R. White, of Stony Brook, Long Island, former army aviator, who has been studying the flight of birds and attempting to imitate it in a wing-flapping, foot-propelled ornithopter, will depart this morning by motor for St. Augustine, Florida, where he will attempt a bird-like flight in his newest machine. For the past six months Mr. White has worked secretly on the machine in the basement of his home and hopes to lift it from the beach of St. Augustine by his foot power.

Last fall on the beach of Cocoa, Florida, Mr. White, according to several witnesses, flew six feet above the ground for nearly a mile in his plane, which resembles the skeleton of a giant bird. His new machine is larger, having a wing spread of twenty-nine and a half feet. The skeleton is of strong chrome molybdenum and can be seen through the covering of tough non-inflammable celluloid.

Mr. White said he had built his machine on a new theory involving the upward stroke of a bird's wing, which he believes produces strong forward momentum. He discovered this accidentally when an upward beat of the wings threw him and the plane suddenly forward.

The whole plane weighs 118 pounds. There are nine primary "feathers" with protectoid covering at the tip. These close on the downward beat and open on the upward stroke. At the back of each wing are eight secondary "feathers." The thicker part of each wing, next to the chassis, resembles closely that part of the bird wing from the body to the first joint.

Three wheels, two on either side and one in front to prevent nosing when the plane is towed, constitute the running gear. The wings are flapped by heavy rubber shock absorber cord which is attached as a "muscle" to the wings and upright members of the chassis. As a rowboat is turned by pulling harder on one oar, so the ornithopter is turned by beating one wing faster than the other.

Mr. White will be accompanied on the trip by Hamilton M. Wright, Jr., of 15 Park Row.

Variable Pitch Airscrews

London *Times*, April 13.—The increased efficiency obtainable from an airplane by the use of a variable pitch airscrew formed the subject of a lecture at the Royal Aeronautical Society last night, when Dr. H. S. Hele-Shaw described the application of hydraulic control to secure the automatic variation of the blades of an airscrew while in flight. The device has been developed in conjunction with the Gloster Aircraft Company, and one such airscrew has been undergoing flying tests at the Royal Aircraft Establishment.

The paper, which was jointly written by Dr. Hele-Shaw and Mr. T. E. Beacham, explained how a fixed pitch airscrew was at best a compromise and how a satisfactory variable pitch airscrew would bring about greater efficiency at climbing speeds as, by reducing the pitch, the drop in engine revo-

lutions and consequent loss of power which occurred in a fixed pitch propeller could be avoided. Further there would not be the loss of power which now occurred at altitude, while with supercharged engines it was of first importance to be able to vary the pitch, for the power absorbed by a fixed pitch propeller was approximately proportional to the air density, whereas the supercharged engine should maintain something approaching constant horsepower up to a predetermined height. With a normal propeller it was impossible to make use of the full power of the supercharged engine at a great height without excessive revolutions. A further possible advantage had been referred to by Major Mayo at a previous meeting. when he spoke of the possibility, by the use of variable pitch airscrews and geared engines, of a twin-engined machine being able to continue flying with one engine completely out of action.

After referring to the difficulty of designing an airscrew with movable blades in which excessive vibration or flutter was not caused by slackness in a relatively fragile structure revolving at high speed, the lecturer described in detail the new Gloster Hele-Shaw-Beacham airscrew. In this the two blades were connected with a central piston in the propeller hub balanced by oil pressure on each side of the piston. The pressure was altered on one side or the other by a variable stroke pump driven by the engine, and the stroke of the pump was in turn controlled by a governor, also driven by the engine, so that whatever the air conditions might be, the pitch of the airscrew set itself so as to keep the engine running at a constant predetermined speed. Thus, in the normal position, the rod operating the change of stroke was in mid-position and no oil circulated; on the other hand, if the speed fell, the pump forced pressure into one oil pipe, causing the cross head to move to the left and decrease the pitch of the blades, while if the engine speed rose, oil was forced into the other pipe and the cross head moved to the right, thus increasing the pitch.

The lecturer pointed out that there was a centering spring in the propeller hub which would always return the blades to normal pitch in the event of any failure of the hydraulic system, and there was also a small control lever by which, within certain limits, the pilot had it in his power to speed up the engine and obtain extra power in an emergency, or, on the other hand, reduce his engine speed so that he might cruise at full throttle. Otherwise the device was entirely automatic in action, and the pilot was relieved from any necessity of thinking about whether he had the right pitch for any given flight conditions.

New Helium Plant Contracted For

Christian Science Monitor, April 10.—The Bureau of Mines has finally closed a contract insuring a continued supply of the rare, non-inflammable gas, helium, upon which the future success of the United States in lighter-than-air craft largely rests. Under the terms of the contract the Bureau will undertake extraction of helium from natural gas on the Cliffside structure in Potter County, Texas, of the Amarillo Oil Company.

A new helium plant will be built by the government. From this source, future dirigibles of the Army and Navy, and later possibly airships for commercial purposes flying the American flag, will draw their lifting element.

The government has scoured the country for available helium supplies. The Cliffside structure made available by its owners was found to be the most promising field. The need for helium became urgent when the United States helium production plant near Fort Worth, Texas, grew incapable of meeting the demands of the War and Navy Departments.

The Texas helium will be recovered by cooling the normal gas of the Amarillo field to 300 degrees F. below zero—a temperature so cold that air, and all the other constituents of the gas, except helium—are reduced to a liquid. The helium will then be drawn off at this low temperature and compressed in tank cars or steel cylinders for shipment.

Then the remaining liquid will be evaporated to the gaseous state once more when its heating qualities will be improved through the absence of its by-product. In announcing conclusion of the final contract the Bureau of Mines states that the Amarillo Oil Company, through its president, offered to place gas from its leases at the

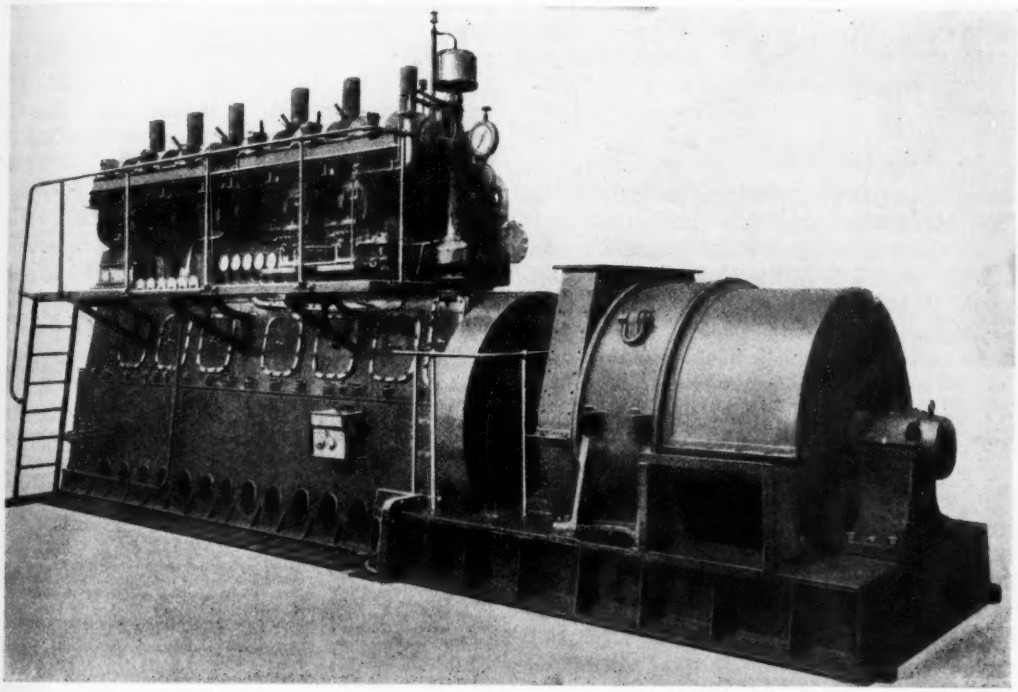
government's disposal, and to provide for the disposal of the gas from which helium has been extracted.

ENGINEERING AND RADIO

Six-Cylinder Generator Set For H.M.S. Rodney

The Engineer, March 16.—For some years past it has been standard Admiralty practice to include one or more oil engine generator sets as part of the lighting and power equipment of a battleship or cruiser. These units are of more than usual interest, since they have to be designed to give a comparatively large output with small space and weight. They must also work in parallel with the steam turbine-driven generators, and, although often placed upon light foundations, must, nevertheless, run entirely free from vibration at a high speed. In the following article we are privileged by the Board of Admiralty to publish some particulars of the two 300-kw., 450 b.h.p., six-cylinder generator sets which were designed jointly by Harland and Wolff, Ltd., and W. H. Allen, Sons and Company, Ltd., and were built by W. H. Allen, Sons and Company, Ltd., at Bedford, for H.M.S. *Rodney.*

The photograph reproduced here shows one of the engines and generators arranged for bench trials at the builder's works. In the *Rodney* there are two such units, placed in the port and starboard engine-rooms, which are arranged to work in parallel with the four steam turbine-driven generators, also supplied by Messrs. Allen. They are six-cylinder, trunk piston engines of the Allen-Burmeister and Wain four-stroke type, with a cylinder bore of 330 mm. (about 13 in.) and a stroke of 450 mm. (about 17¾ in.). The designed output is 450 b.h.p. at 350 r.p.m. and the Allen dynamos have a rated output of 300 kw. at that speed. The generators are of the two-bearing enclosed and pipe ventilated, shunt-wound type, and they are designed to be capable of running at the increased output of 355 kw. for two hours, and at a fifty per cent overload for two minutes. In order to facilitate parallel running with the turbo generators, each dynamo is furnished with two shunt generators and one protecting coil. During the trials the guaranteed full load fuel consumption of 0.43 lb. per



SIX-CYLINDER GENERATOR SET FOR H.M.S. "RODNEY"

b.h.p. hour was easily obtained, and the sets when installed in the ship were found to be free from vibration at all speeds.

Some interesting auxiliary units were specially designed to accompany the two engines we have described. They include water-cooled silencers and exhaust pipes, so that no undue heating of the engine-room spaces may occur in service. The cooling water is supplied by a separate motor-driven pump, which draws its supply through duplex strainers of the Royle type. For starting up, a small water pump fitted to the engine and driven by friction gear is employed. A separate motor-driven lubricating oil pump is used for starting up, after which the oil service is maintained by a directly operated pump of the gear type. For transferring the fuel oil to the ready-use tanks, a special motor-driven pump is fitted. The ready-use tanks are furnished with steam heating coils and an electric oil heater is also supplied for use with heavy oil, should this be required.

The total weight of the engine and generator we have described is only thirty-one tons, or about 154 lb. per b.h.p.

New Type Radio Beacon

Christian Science Monitor, March 29.—That wireless beacons will entirely displace the ordinary lighthouses is not likely in the near future, but the success which has attended the one already in commission on Round Island and the experimental stations at other places have proved what a valuable supplement they are. Stations are in course of construction at the Casquets, Hart Point, the Skerries, and Lundy Island, while others have been sanctioned and should be erected within a year at Sule Skerry and South Bishop. The average cost of each of these stations is about £4,000.

High expectations have been formed of the rotating beacon transmitter which, if fully realized, may lead to their use entirely of lighthouses. This system makes use of a vertical closed loop rotating at a uniform speed of one revolution per minute. The radiation from the loop is a maximum in the plane of the loop and zero at right angles to that plane. A special signal, which may be termed the north signal, is sent when the plane of the loop is perpendicular to the geographical meridian, and another, the east signal, when the plane is in the meridian; at other times a steady "dash" is transmitted.

At the ship's receiving station the time of the ending of the north signal is observed and a stop watch is started and when the signal is reached a simple calculation gives the observer's bearing from the beacon. As the rotation of the loop is at the rate of once per minute, the number of seconds from the reception of the north signal to the zero multiplied by six gives the bearing in degrees, and calculation can be avoided altogether if the stop-watch dial is graduated in degrees.

Hitherto experiments have been made on a wavelength of 525 meters, but under the recent Washington Wireless Conference this will have to be moved up to about 1,000 meters. So far as is known this rotating beacon is not being experimented with in any other country. At present France occupies a leading position in regard to wireless beacons, as in five years' time she hopes to have a network of twenty-nine radio beacons, of which eight will be established this year on her channel and Atlantic coasts.

A powerful station situated at Pianier on the Mediterrenean with a range of 250 to 300 miles will send out signals throughout the 24 hours. This and three other stations will be powerful ones and kept working automatically, while the remainder will only operate in bad weather. But the usefulness of all wireless stations naturally depends on the installation in ships of receiving apparatus. At present only about nine per cent of the world's shipping is so fitted.

Utility of Radio Beacon Discussed

New York *Times,* April 8.—Doubt is expressed by the Navy Bureau of Aëronautics as to the utility of the radio beacon system of guiding aircraft over curving or otherwise irregular airways. While admitting the importance of the radio-beacon method adopted by the Army and the Department of Commerce, the Navy Bureau, in a special report on radio direction finders, points out the limitations of this method of guidance as applied to naval aircraft.

The report discusses the three general methods in use and under development at the present time for determining the position of aircraft by radio. These are: (a) radio compasses installed at shore sta-

tions or on board ships which take bearings of transmitters carried by aircraft; (b) radio compasses or fixed compass loops installed in the aircraft which take bearings on radio beacons or other transmitters on the ground or on surface ships; and (c), radio beacons having beam characteristics installed along airways and at terminal airdromes. Each method has its advantages and limitations, but only those which concern their application to naval aviation are discussed.

The method in which the radio compass is at shore or ship stations [says the report] has been used considerably in the past and will continue to be used in the future. It is necessary for aircraft using this system to carry both a transmitter and a receiver, which most naval aircraft do. The aircraft desiring a bearing makes the customary signals, and the ship or shore station, after taking the bearing, transmits same to the aircraft. In case the aircraft wishes to arrive at the station taking the bearing, it flies a course which is the reciprocal of the transmitted bearing.

This is the system preferred and in use on a number of the European airways. The disadvantages are that one compass station or group can take bearings of only one aircraft unit at a time, which in some cases might cause embarrassing delay in thick weather. It also requires the carrying of a transmitter, which might be objectionable under some circumstances, and does not provide for an aircraft taking bearings of other vessels.

There are two different installations possible under the method in which radio compass is installed on the plane. One provides for a single or double fixed loop built into the wings of the plane. The transmitting station being received is used as a radio beacon, and while the aircraft is headed in its direction or directly away, and is at some distance, no signal is received in the pilot's headphones. When the plane is swung to the right or left of this heading, the signal is heard and increases in volume to a maximum when the course is 90 degrees to the right or left of the exact heading. The disadvantage of this installation is that it requires a pilot to deviate from his course (unless the course coincides with the heading of the transmitting station) while he takes the bearing and is assured of its accuracy.

The third installation provides for one fixed fore and aft and one or two athwartship compass loops built into the plane. The aircraft maintains its course and the radio operator balances the incoming signals in the fore and aft coil against those in the athwartship coils by means of a goniometer and reads therefrom the bearing of the station. This enables the most experienced radio man in the crew to operate the equipment and does not put additional duties on the pilot at a time when possibly his entire attention should be used in piloting his aircraft.

Unification of Cable and Radio Companies

Abstract of address by General J. G. Harbord.—The unification of cable and radio communication companies in Great Britain should be answered by a similar movement in this country, if America is to meet England's challenge for supremacy in world communications, Major General James G. Harbord, President of the Radio Corporation of America declared in a speech before the business policy class of the Harvard Graduate School of Business Administration, here today.

To facilitate such a coördination of the two systems, General Harbord explained, the American companies, both cable and radio, should be exempted from the operation of the anti-trust laws, but placed under government regulation of rates.

With a wisdom born of many more centuries with which the sons of Britain have gained an experience greater than that of our own statesmen in foreign policies [General Harbord said], it is perhaps natural that they should, sooner than our government authorities, recognize the value of unification of communication in a world-wide sense.

During the last few months [the General went on to say, after telling of the important position that America had attained in radio communication since the organization of the Radio Corporation of America] it has become apparent to the cable interests of Great Britain that the growing radio supremacy of the United States, and in particular the greater efficiency of the beam system of transmission as compared to the older cable method, has directly challenged the cable leadership in Great Britain.

As a consequence of this trend, the older country has recently taken steps to meet this challenge in bringing about the unification of cable and radio interests. This will undoubtedly strengthen the position of Great Britain, both in times of war and in peace, affording as it will, communication by British circuit to practically every foreign port and principal city of the world.

The American answer to this challenge can only be made by submitting the greater communication companies, both cable and radio, to proper government regulation as to rates, while exempting them from the operation of the anti-trust laws and permitting unification here and thus meeting the trust of unification abroad.

The war did much [General Harbord asserted] to develop a world consciousness in the American people.

American business, aware of the end of our commercial isolation and eager to share in the world's markets, began to seek export trade in earnest. The United States was no longer willing to accept a "party line," so to speak, in the scheme of world communications.

The newly created nations of Europe likewise sought to establish direct contact with us in foster-

ing good will and trade, and the way was paved for an all-American communication service.

Soon after the war, the British Marconi Company was at the point of placing a five-million dollar order with the General Electric Company for the exclusive rights to the use of the Alexanderson alternator, the speaker revealed, when

President Wilson, in Paris at the time, sent Admiral Bullard and Captain Hooper to the General Electric Company with a request that it decline to sell to the British Marconi Company or issue rights to foreigners to use its inventions.

The president sensed an obvious intent on the part of the British to dominate international communication and transportation. Inasmuch as they were already predominant in the cable field, the control of radio facilities, if achieved, would give them a veritable monopoly in the transmission of intelligence throughout the world.

In April, 1919, Admiral Bullard appeared before Owen D. Young, and other General Electric officials in New York, the speaker related.

In the presence of this small gathering, this government representative disclosed the irreparable injury to American interests that would ensue if the Alexanderson alternator were sold to any foreign government or private company. He pointed out that, although our citizens had never played a prominent part in cable communications, here was an opportunity to retain in American hands the complete control of radio communication, not only in the United States, but in Central and South America, as well. In this connection, he outlined a policy of wireless doctrine not unlike that of our great Monroe Doctrine.

The General Electric Company broke off its negotiations with the Marconi people, General Harbord continued, and coöperated with other owners of radio patents, in forming the Radio Corporation of America, as an American-owned and controlled radio communication system.

The Radio Corporation of America came into being in response to the urgent call of an enlightened public opinion.

Its mission was to secure for America that unquestioned supremacy in radio communication to which the contributions of inventive genius, industrial organization, and capital justly entitled it. In the nine years the Radio Corporation has been in existence, there has taken place a development fully comparable to that of the British cable system over a period of six decades.

Speaking of the political and educational effect of radio, General Harbord declared that

In America it has played a major rôle not only in the development of a national consciousness in our own people, but also in the development of a cosmopolitan consciousness of the world at large.

More than all the peace conferences of history, it has served to make the concept of "peace on earth, good will toward men" a reality, and, taking the world by the hand, has led it one big step farther down that shadowy trail that ends in Utopia.

General Harbord spoke at length on the subject of "Radio in the World War, and the organization of an American-owned trans-oceanic radio service." He appeared as one of the speakers selected to deliver a series of lectures on the radio industry before the business policy class of the Harvard Graduate School of Business Administration.

CURRENT ARTICLES AND BOOKS

"Marine Corps Aviation—experiences in Nicaragua and China," by Major E. H. Brainard, U.S.M.C., *The Marine Corps Gazette,* March.

"Testimony of the Major General Commandant before the Senate Committee on Foreign Relations," *Marine Corps Gazette,* March.

"American Naval Policy," by H. C. Bywater, *Nineteenth Century,* March.

"The Future of the Submarine," *World's Work,* April.

"Rigid Airship Construction," by V. C. Richmond, *The Engineer,* April 13.

"Average Sea Speeds of Ships under Winter Weather Conditions," by J. L. Kent.

"Progress in Economy of Turbine Machinery on Land and Sea," by Sir C. A. Parsons.

"An American Merchant Marine, Why? How?" by Dudley B. Donald, *The Nautical Gazette,* April 7.

"Engineering, Chemistry, and War," by Major General Amos A. Fries, *The Tech Engineering News,* April.

"The Experimental Mechanised Force." A lecture delivered at the Royal Artillery Institution by Colonel R. J. Collins, C.M.G., *Journal of the Royal Artillery,* April.

"Synthetic Petrol," by Captain C. A. P. Murison, M.C., R.A., *Journal of the Royal Artillery,* April.

"Pulverized Fuel for Marine Purposes," by Engineering Captain J. C. Brand.

NOTES ON INTERNATIONAL AFFAIRS

From April 3 to May 3

Prepared by Professor Allan Westcott, U. S. Naval Academy

MULTILATERAL ANTI-WAR TREATY

Secretary Kellogg's Proposal.—Following Foreign Minister Briand's note of March 30 expressing willingness to take up negotiations for a multilateral war renunciation treaty, subject to various reservations, Secretary Kellogg on April 13 submitted to Great Britain, Germany, Italy, and Japan a draft treaty, along with all the previous Franco-American correspondence on the subject. In a public statement Secretary Kellogg said this procedure had the full approval of the French Government, though the latter was not committed to approval of the draft proposed. Secretary Kellogg's treaty reads as follows, with omission of formal heading and conclusion:

[The rulers or executives of the several states, United States, France, Great Britain, Germany, Italy and Japan],

Deeply sensible that their high office imposes upon them a solemn duty to promote the welfare of mankind:

Inspired by a common desire not only to perpetuate the peaceful and friendly relations now happily subsisting between their peoples but also to prevent war among any of the nations of the world:

Desirous by formal act to bear unmistakable witness that they condemn war as an instrument of national policy and renounce it in favor of the pacific settlement of international disputes:

Hopeful that, encouraged by their example, all the other nations of the world will join in this humane endeavor and by adhering to the present treaty as soon as it comes into force bring their peoples within the scope of its beneficent provisions, thus uniting the civilized nations of the world in a common renunciation of war as an instrument of their national policy:

Have decided to conclude a treaty and for that purpose have appointed as their respective plenipotentiaries: [Names left blank]

Who having communicated to one another their full powers found in good and due form have agreed upon the following articles:

ARTICLE I

The high contracting parties solemnly declare in the names of their respective peoples that they condemn recourse to war for the solution of international controversies, and renounce it as an instrument of national policy in their relations with one another.

ARTICLE II

The High Contracting Parties agree that the settlement or solution of all disputes or conflicts of whatever nature or of whatever origin they may be, which may arise among them, shall never be sought except by pacific means.

ARTICLE III

The present treaty shall be ratified by the High Contracting Parties named in the preamble in accordance with their respective constitutional requirements, and shall take effect as between them as soon as all their several instruments of ratification shall have been deposited at . . . .

This treaty shall, when it has come into effect as prescribed in the preceding paragraph, remain open as long as may be necessary for adherence by all the other powers of the world. Every instrument evidencing the adherence of a power shall be deposited at . . . . and the treaty shall immediately upon such deposit become effective as between the power thus adhering and the other powers parties hereto.

Germany Approves.—On April 30 the German Government, after having studied also the French draft with its six reservations, sent a reply to Secretary Kellogg expressing complete approval of the American draft, and declaring no qualifications necessary. As a matter of fact the German attitude was never doubtful, for, as stated previously in an article in *Germania*, "It would be a paradox for a disarmed nation incapable of waging war" to be hostile toward such a proposal.

FRENCH ALTERNATIVE PROPOSAL.—Following the presentation of the American draft treaty, the French Government on April 19 sent to the powers a draft of their own embodying the reservations they deemed necessary. The first two articles of the two drafts were practically identical, following closely the original proposal of Foreign Minister Briand for a Franco-American agreement. The French reservations were six in number, and, in summary, stipulated that the proposed treaty should not:

1. Impair the right of legitimate self-defense.
2. Violate the Covenant of the League of Nations.
3. Violate the treaties of Locarno.
4. Violate certain unspecified treaties guaranteeing neutrality.
5. Bind the parties in respect of a state breaking the treaty.
6. Come into effect until ratified by all, or substantially all, of the powers of the world.

In the British and other foreign press the opinion was expressed that these reservations pretty effectively "denatured" the Kellogg Treaty, and presented a serious obstacle to any agreement. In a speech before the American Society of International Law on April 28 Secretary Kellogg, however, argued that, while the reservations were needless, they did not present serious difficulties. As to the first reservation, he said the right of self-defense was implicit in every treaty and would not be impaired by the one proposed. As to the second reservation, the League Covenant did not positively require any nation to go to war in its enforcement. As to the third, any violation of the Locarno treaties would also be a violation of the anti-war treaty, provided the nations concerned were parties to both. As to the fourth, France might persuade her allies to join the anti-war treaty, in which case a violation of that treaty would automatically leave France and her allies free to act. As to the fifth, it was a well accepted principle of international law that violation of a treaty by any member state would automatically release the other states from their obligations. As to the sixth reservation, it seemed undesirable to wait until nearly every nation great and small had ratified, since acceptance of the treaty by the six major powers would be a practical guaranty against another world war.

These explanations and assurances were favorably received in France, and it was considered possible that the French reservations might perhaps be adequately expressed outside the actual treaty.

BRITISH VIEW FAVORABLE.—The attitude of the British Government and press was in general favorable to the Kellogg proposals, seeing in them an opportunity to associate the United States effectively in efforts for world peace, and to put an offender against the League Covenant in the position also of an offender against a treaty signed by the United States.

FRENCH SEE INCONSISTENCY.—The following article by Jules Sauerwein, Foreign editor of the Paris *Matin*, appearing in the New York *Times* of April 15, pointed out an apparent inconsistency between the sharp reservations of the American arbitration treaties and the renunciation of war. If the reserved questions are not to be arbitrated, nor yet fought over, how are they to be settled?

What has Mr. Kellogg done in the past few months?

He has concluded or is concluding, with a series of countries new arbitration treaties. These treaties are all on the same model, which is to say, they resemble closely that signed with France on February 6.

It is said in Article II that all differences not settled by diplomatic means or by conciliation are to be submitted to arbitration. But Article III says the provisions of the treaty cannot be invoked with regard to questions which touch national jurisdiction, which involve the interests of third parties, which concern the Monroe Doctrine, and which affect the engagements of France as a member of the League of Nations. Thus, the gravest conflicts are excepted from the process of arbitration and conciliation.

While engaged in negotiating this sort of treaties Mr. Kellogg, on April 13, delivered to the Great Powers the draft of a treaty excluding war. Article II says, "The High Contracting Parties agree that a settlement or solution of all disputes and conflicts of whatever nature or whatever origin, which may arise among them, shall never be sought except by pacific means."

Thus, no exception is made in this banning of war. A recourse to arms has been finished with humanity. For all differences must be settled pacifically.

If France or England fortified the West Indian Islands, if Japan installs a naval base on the Mexican coast, if for any reason the free circulation of American ships at sea be interrupted —in these cases, as in all others, the United

States promises solemnly, along with the other powers, to exclude any settlement which is not strictly pacific.

This is, indeed, the Geneva formula which might be taken to open a new era for civilization. But, then, the question arises which appears not so much to the mind of the diplomat as to the mind of the man in the street, "if on the one hand you make arbitration treaties excluding the gravest sort of conflicts and if on the other hand you make a universal treaty forbidding you to go to war under any conditions, there are only two explanations to this apparent contradiction—either the proposed anti-war compact cancels all existing arbitration treaties, and therefore all reservations made, and arbitration becomes obligatory and universal, or else you have discovered a means of settling conflict pacifically without resorting either to force or to arbitration."

For the hypothesis the first Kellogg treaty lacks an article specifically annulling all preceding international obligations for the maintenance of peace. With regard to the second hypothesis, humanity is feverishly anxious to learn about the new system which the Washington leaders have imagined, and which we have been searching for at Geneva for nearly ten years.

A RECORD OF IRRECONCILABILITY.—In connection with the anti-war treaty, it is worth while to reprint a passage which appeared in the April issue of the PROCEEDINGS, p. 263, in the article by Lieutenant Commander Rooks "On the Prevention of War."

There remains only the highly advertised movement to "outlaw" war. This idea has had a curious history. It was first used to strengthen the idea of a league to enforce peace. Makers of aggressive war were to be declared outside the law, and punished for high international crime. When public opinion became set against covenants to enforce peace, the idea was brought forward with a radically altered meaning. It now became a great *moral renunciation.* War was to be abolished simply by declaring it illegal; no political or military commitments were in any way involved except an international agreement forever renouncing war. It aimed at a solemn declaration on the part of each nation to renounce war as an instrument of national policy, at the formulation of a new and comprehensive code of international law, and at the creation of another world court to interpret that law. It has since been unalterably opposed to the League of Nations, or, indeed, to any league. In the words of Mr. Walter Lippmann, the phrase is associated with a "perfect record of irreconcilability."

"We find," he says, "that the phrase was first employed in order to strengthen a League before there was a League. It was used to defeat the League after there was a League, and to advocate an international court before there was a Court. Now that the Court has been created, it is being used to defeat the Court, and to advocate another court which does not exist."

UNITED STATES

NEW TREATY NEGOTIATIONS.—A new arbitration treaty between the United States and Italy, parallel to the recent treaty with France, was signed on April 19. Negotiations for similar treaties are in progress between the United States and twenty-five other nations, including Great Britain, Germany, Japan and Turkey. Conciliation treaties are under discussion with seventeen nations; commercial treaties calling for "most favored nation" treatment, with fourteen countries; and agreements in regard to fisheries, smuggling, maritime law, etc., with twelve. To take care of this increased activity, a new division has been created in the State Department for drafting and study of such agreements and for collection of a file of existing compacts.

WORLD COURT ISSUE REVIVED.—World Court discussion was reopened in the Senate on April 9 and again later in connection with the Gillett Resolution asking the President to renew negotiations. Senator Borah said he thought no member of the Foreign Affairs Committee, and in fact perhaps no senator, wished to modify Reservation V, and that further negotiations would hence be futile. The Senator added that the President had no power to modify or even construe this reservation. It will be recalled that Reservation V would prevent the Court from rendering an advisory opinion upon any question in which the United States had, or claimed, an interest; and that this was the only one to which Court members took exception in the American application for membership.

In the Senate some objection was made to the flood of letters sent to senators at the suggestion of the American Peace Foundation, which has issued arguments in favor of the Gillett Resolution.

NICARAGUA

AMERICAN MINES RAIDED.—Despatches from Nicaragua in late April reported that Sandino forces in northeastern Nicaragua had raided several gold mines in the region and had seized at least five employees, three of them American. These included H. P. Amphlett, a British subject, superintendent of the mine, and his assistant superintendent, J. B. Marshall of New York. It was re-

ported later that Marshall had been killed. A new airplane base was subsequently established at Puerta Cabesas on the Atlantic Coast, to facilitate the operations of marines already stationed there.

Brigadier General McCoy, Supervisor of Nicaragua Elections, left Managua on April 28 for consultation in Washington. Registration dates for the Nicaragua election have been set for September 23, 26, and 30, and October 3 and 7, nearer to the election itself, which is to be held on November 4.

FRANCE

POINCARÉ VICTORY IN ELECTIONS.—Parliamentary elections in France ended April 29 in a decided victory for the Cabinet of National Union headed by M. Poincaré, which will control a majority of at least 100 in the new Chamber, with still stronger support for the Premier's financial measures and the peace policies of M. Briand. There will be 612 members in the new Chamber, as compared with 584 in the last. In reality there was no very great shift in party alignments. The chief losses were in the extreme Left, the Communists losing thirteen of their twenty-nine seats in the former Chamber, while the gains went to the Center and Nationalists. There appeared a possibility that M. Herriot and the other Radical Socialist cabinet members might be called upon to resign in view of the strengthening of the parties of the Right.

Because of the complicated French voting system, by which candidates who do not receive a clear majority in a first ballot are voted on a week later, the outcome of the elections, which were held on two successive Sundays, April 22 and 29, was not assured till the second vote. It was reported that chief interest was centered in M. Briand's anti-war negotiations, rather than in financial measures, and so strong was the support for the former that even Nationalists and militarists had to adopt a pacifist strain.

ITALY

PLANS FOR PERMANENT FASCIST RULE.—According to a dispatch of April 10 by Edwin L. James in the New York *Times*, Premier Mussolini now finds his grip on Italy so secure that he feels no longer the necessity of keeping his own personality in the spot light, and is laying plans for insuring, beyond his own lifetime, the continuance of Fascist power. "He has replaced loquacious and often inefficient parliamentarism with Mussolinism, and now he seeks to replace the old régime with permanent Fascism."

To this end the Premier will push through his scheme of parliamentary reform, by which only the 400 candidates named by the Fascist organizations will be presented at the first ballot, and will be declared elected except in the unlikely case that they are defeated by a majority vote. Parliament will then consist of but one party, and will become a mere advisory body to the executive power.

This last the Premier would put in the hands of the Grand Council of the Fascist Party, which he is now seeking to give constitutional status and powers. And to this Council, in the event of his death, would fall the task of maintaining the Italian Government on Fascist lines.

RUSSIA

THEORISTS OVERTHROWN.—An article by Arthur Ransome in the Baltimore *Sun* of April 29 throws deserved emphasis on the fact that the recent conflict within the Soviet Party in Russia has resulted in the overthrow of the older professional agitators and theorists and their replacement by a group of practical workers who have risen from the ranks in the ten years of Soviet rule. In the Political Bureau, or inner council of the Central Committee, only two of the eight members are of the educated class. Stalin is the son of a peasant shoemaker, and was expelled after a short time from a seminary where he was put in the hope of making him a priest. In the whole Central Committee only fourteen members are not strictly of the proletariat and peasant class. And all of the half dozen opposition leaders ousted last winter from the Council and the party came from this minority group.

The significance is that the present Soviet rulers are much more interested in the continuance of the present régime in Russia than in the promotion of Communist ideals, and are willing to insure its continuance by a considerable sacrifice of radical principles. Hence the elimination of Trotsky, who be-

lieves Communism impossible in one country alone and fears the "degeneration" of Sovietism into a bourgeois government, in fact if not in name.

As Mr. Ransome points out, Soviet foreign policy has in the last year suffered two severe defeats, first in the rupture with England, and second in the complete break with the Chinese Nationalists. These defeats were directly due to the Communist Third Internationale, which pushed its propaganda in disregard of Lenin's policy of supporting Nationalist movements in "colonial and half-colonial countries" without efforts to make such movements communistic. In the future, Mr. Ransome predicts an effort to "tame the Internationale" or to put more dependence on the strictly Soviet Commissariat of Foreign Affairs.

FAR EAST

NATIONALIST SUCCESS IN SHANTUNG.—At the close of April it appeared clear that the Nationalist forces had overcome opposition to their advance into Shantung and had captured Tsinan, the capital of the province. The Southern army was reported to be in control of the greater part of Shantung, except in the Tsingtao area, where little fighting was expected. In the attack on Tsinan a bridge was blown up cutting the Tsinan-Tsingtao railway, despite Japanese warning that they intended to keep this line of communication open. Dispatches from Northern China reported the complete demoralization of the army of Chang Tsung-Chang, the Shantung war lord, which has dwindled from a million men a year ago to 50,000 undisciplined followers today.

JAPANESE FORCES IN SHANTUNG.—With the resumption of hostilities in Shantung Japanese forces in the province were strengthened by 5,000 or more, troops were sent in to maintain neutral zones in Tsinan, and an effort was made to maintain communications along the Tsinan-Tsingtao railway. These measures brought two sharp protests to Tokio from Nanking, to which the only reply made was that Japanese forces would maintain strict neutrality between North and South and would be used only in protection of Japanese lives and property. Some measures were taken by the Nationalist authorities to prevent clashes with Japanese and other foreigners.

AMERICAN MISSIONARY KILLED.—On April 16 Dr. Walter F. Seymour, superintendent of the American Presbyterian Foreign Missions Hospital of Tsining, in Shantung, was killed, and, as appeared from subsequent reports, by Southern soldiers when he attempted to resist their entrance to the women's wing of the hospital. Both the Northern and the Southern Governments disavowed responsibility. The Presbyterian Board in New York announced that the killing was an "irresponsible act . . . . in disobedience to the orders of the Nationalists."

CONDITIONS IN NORTH CHINA.—According to correspondence which appeared in the New York *Times* of April 10, conditions in Northern China under the rule of Chang Tso-lin were such as to make the capture of Peking by National forces during the summer a strong possibility. The actual situation remains concealed from General Chang himself, who rarely leaves his palace quarters in Peking. Only about one-tenth of the taxes collected have reached the central government, which is on its last legs financially, yet a Tariff Autonomy Commission has been established which is going ahead with plans to put into effect tariff autonomy by the first of next year. This was agreed upon by the International Tariff Conference of 1925, but only on condition of a stable government and abolition of *likin,* or internal transit dues, which on the contrary have been doubled. Japan especially, as well as other foreign powers, is opposed to increased Chinese revenues which would simply swell the funds for factional warfare.

MANCHURIAN RAILWAY PROBLEM.—Writing in defense of Japanese policy in Manchuria, in *Foreign Affairs* for April, the Japanese correspondent K. K. Kawakami speaks as follows of the beneficient results of Japanese railway control:

> To Japan, after all, the Chinese question means mainly the Manchurian question, and the core of the Manchurian question is the railway. In the entire railway system of China, the Japanese-owned and Japanese-operated South Manchuria Railway is the only bright section. When a traveler alights from the Chinese train at Mukden and embarks on the Japanese one, he feels as though he had left behind a benighted country full of horrors, and emerged into a new one animated with the joy of life. The railway ex-

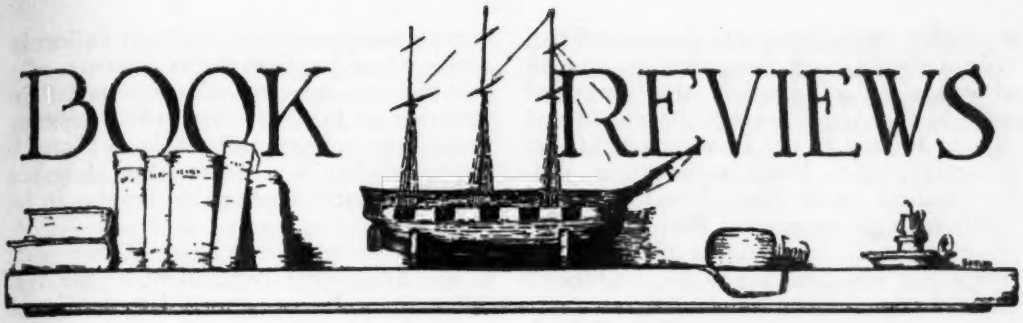
Foreign Affairs, April, 1928

THE MANCHURIAN RAILWAY SYSTEM

The Chinese Eastern Railway runs from Manchuli to Pokranichnaya (Suifenho) and also includes the branch line from Harbin to Chanchun.

pends enormous sums for schools, hospitals, sanitation, and modern public works for the benefit of both the Chinese and the Japanese in the railway zone. Yet it yields handsome profit every year. Largely through its enterprise, the foreign trade of Manchuria has grown from a negligible quantity to about $450,000,000 (1926). Before the advent of Japanese enterprise the Manchurians barely eked out a living by taking in each other's washing. Their principal products, beans and millet, had no market outside of Manchuria and a few Chinese ports. Today the export of beans and bean products alone amounts to about $132,600,000 (1926). It was a Japanese firm, Mitsui and Company, which in 1911 first introduced the Manchurian bean to Europe as a raw material of lubricating and culinary oil. The Central Laboratory of the South Manchuria Railway has found numerous other uses for the bean, and today the once obscure legume has firmly established itself as an article of world merchandise. This phenomenal growth of Manchuria's agriculture and trade has naturally raised Dairen, the terminal port of the South Manchuria Railway, to a second place among the commercial ports of China. In 1926 Dairen's foreign trade totaled 332,000,000 haikwan taels, or $250,000,000, exceeded only by Shanghai's 972,000,000 taels, or $729,000,000.

Shall this condition of peace and prosperity be replaced by chaos and misery such as has made life unbearable in war-ridden China? It is inconceivable that Japan will permit the factional feuds of China to convert South Manchuria, especially the railway zone, into a harrowing scene of destruction and pillage.



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FIELD MARSHAL SIR HENRY WILSON

By Major General Sir C. E. Callwell, Scribner's, New York, $10.

If a true history of the World War is finally written, it will largely develop from the diaries and memoirs of the statesmen, soldiers and sailors who actually conducted the war. The publication of these personal accounts of the war has been hastened by the action of the Russian and German governments in opening their archives to the public and by the desire of many of the principal participants to justify their actions during the great crisis. The publication of the German and Russian accounts also forced other countries to make their official statements earlier than was formerly customary, so that in the short space of ten years the world has been given secret information on state matters concerning the World War that in previous eras perhaps would have never seen the light and certainly would not have been published in the lifetime of most of the actors. Probably more accurate secret information has been published about the World War than about the Franco-Prussian War of 1870.

Among the various books about the World War, the *Life of Field Marshal Sir Henry Wilson* by General C. E. Callwell will take high rank in interest. Wilson occupied positions in the British Army before and during that war which enabled him to know the inner workings of the British government's policy and the plans of the British Army to support it. During the war, he was so situated and had so many highly-placed *confidantes,* that he was continually informed of the inner movements in the higher governmental circles of Britain and France, both military and civil. At the close of the war and subsequently until a few months before his death in 1922, he was chief of the Imperial General Staff and largely influenced British foreign policy after the war.

To military readers the career of Wilson will be of absorbing interest; to all of them, the methods he employed to rise to a high place, and his conduct after achieving high place during the trying days of 1917 and 1918, will prove instructive and to most of them will be entertaining.

Henry Wilson was descended from a John Wilson who was with William III during the invasion of Ireland in the year 1690, and from that time his family lived at Currygrane in the County of Longford. His ancestry and his family traditions dictated Wilson's actions in the Ulster crisis in 1914, and he became the dominating spirit in the quasi Army revolt that followed Asquith's attempt to coerce Ulster.

Wilson's action in this crisis brought him into disfavor with Asquith, and in 1915 when Murray was relieved as chief of staff of the British Expeditionary Force, Asquith vetoed French's recommendation that Wilson succeed Murray.

His youth was marked by no particular incidents, and like many other famous men, his most important youthful efforts were unsuccessful, for three times he failed to enter Sandhurst and twice failed to enter

Woolwich. His father was determined that Wilson should enter the Army, so he took advantage of a procedure that permitted entry in the Army through the militia and entered his son in the Longford Militia in December, 1882. While in the militia, Wilson trained with the Royal Munster Fusiliers in the summer of 1884, and in October passed the examination of the regular Army and was assigned to the Eighteenth Royal Irish.

He was transferred to the Rifle Brigade and sailed for India in February, 1885, where he joined the first battalion and took part in the Burma Expedition in 1887. He was seriously wounded and invalided home in November, 1887, and remained on sick leave for an extended period while carried on the rolls of the Rifle Brigade.

He tried for the Staff College in 1891 but failed to get the assignment. Cowans of his brigade, who became quartermaster general of the British Army during the World War, was chosen instead of Wilson. However his persistence was rewarded in 1892 when he passed successfully and reported at Camberly.

Until this time, Wilson's career had been at best only average. At Camberly, he came under the influence of Colonel Henderson, the author of *Stonewall Jackson,* a brilliant student, and an inspiring instructor of the art of war. At this time, Henderson was delivering his lectures on military history which were afterwards collected into a book titled *The Science of War.*

By an interesting coincidence, about the same time Mahan was delivering lectures at our Naval War College which developed into his famous book *The Influence of Sea Power on History.* Henderson was well acquainted with Mahan's work and at one time stated that the mission of the British Army was to assist its Navy to gain command of the sea. Probably Mahan was acquainted with Henderson, for at an early date, Henderson's book was in use at our Naval War College.

Henderson seems to have been able to inspire his students with his own love of military history and the art of war, and under his tutelage Wilson began the study of war in all its phases and ramifications that only ended with his death. Henderson began the custom of visiting the battlefields of 1870 with his students and lecturing on the actual scene of conflict; when Wilson became commandant of the Staff College he continued and extended this custom.

While at Camberly, Wilson attracted the attention of Lord Roberts, who frequently visited the college, and, made a favorable impression on the instructors though he was not particularly studious or regular in his work.

After leaving the college, Wilson went to the intelligence department of the War Office where he was attached to the French section with Colonel Repington. This assignment further concentrated his attention on the European situation with which he was already acquainted through visits he made to the battlefields of the War of 1870 while at the Staff College. These visits to the European battlefields were the forerunners of many such journeys and thereafter rarely a year passed that Wilson did not go to Europe to study some battlefield or frontier.

During his youth, Wilson had become very proficient in the French language and he increased his command of that tongue by his work in the intelligence department and by his frequent visits to France. He established close relations with the Foreign Office and in later years as director of military operations, he continued this very useful connection by holding a daily conference with the under secretary of foreign affairs, Sir Arthur Nicolson.

Wilson missed the Sudan Campaign and in consequence was passed for promotion by several contemporaries. He served in South Africa as brigade major and was present at the Battle of Colenso in which the British were defeated. After the battle, he wrote, "and they (the Boers) remained complete masters of that side of the stream and I don't see myself how we are going to cross it to get to Ladysmith." His biographer strains considerably to give Wilson credit for the subsequent successful passage of the stream. He went from brigade major to temporary duty on the staff of Lord Roberts and made himself so useful that he returned with him as assistant military secretary when Lord Roberts succeeded Woolsey as commander-in-chief of the Army. He had served on staff duty from 1894 to 1901 and, although a favorite of Lord Roberts, the latter made no secret of his opinion that Wilson should return to duty with troops.

All Britain was horrified at the ineffi-

ciency of the Army in the South African War and various committees were appointed by Parliament to investigate and report the remedy. These culminated in the so-called "Esher Committee" headed by Lord Esher, which made drastic changes in the organization of the British Army. In his diary, Wilson was very caustic in his comments about the committee until he learned that he would be appointed assistant director of military operations, whereupon he changed his tone and apparently approved of the changes made.

As assistant director of military operations, he had much to do with reorganizing the War Office and held this position until he went to Camberly as commandant of the Staff College with the rank of brigadier general in January, 1907. It was here that he first revealed his real ability. He seems to have been ideally suited for this position and there is evidence outside of his own diary that he was an inspiring teacher of the art of war and increased the usefulness of the Staff College. Many of his students subsequently rose to positions of great responsibility in the Army and they almost unanimously attribute their success to their training under Wilson. It was here that he developed his natural talent for clear presentation of military and political subjects which was so useful to him and Great Britain during the war, and which enabled him to dominate most of the numerous committees on which he served.

In 1909, Wilson paid a visit to the French staff college in Paris where he met Foch, who was then commandant. At this first meeting between these two distinguished soldiers, Wilson made most of the overtures but Foch soon succumbed to the charm of this genial guest and later returned the visit. Foch and Wilson began an acquaintance which developed into a friendship that endured the strain of the darkest days of the war when there was abundant suspicion and distrust between other French and British officers. Rarely in history will be found two such loyal comrades in arms as these two field marshals, and France and Britain sorely needed their conciliatory services in 1916 and 1917 when other British and French leaders were almost hostile.

While at the college Wilson had a discussion with Kitchener that caused ill will between them, which in 1914 was increased by Wilson's open criticism of Kitchener's efforts to raise the New Army.

From the Staff College Wilson hoped to go to command a brigade at Aldershot, for he felt the need of service with troops and was offered a brigade by General Sir H. Smith-Dorrien subject to the approval of the chief of the Imperial General Staff, Sir William Nicolson, who, however, had other plans for Wilson and ordered him to the War Office as director of military operations, where he reported in the summer of 1910.

He immediately began to vitalize the plans of the British Expeditionary Force for participation in a continental war as the ally of France, for he was convinced that in the near future war between the Dual Alliance and the Triple Entente was inevitable. His knowledge of continental Europe, particularly the boundaries between France, Belgium, and Germany, was especially useful. He was now well acquainted with Foch and together they became the moving spirits in the various conversations, staff rides, and other undertakings which made possible the rapid transfer of the British Expeditionary Force to France in August, 1914. There is sufficient external evidence to indicate that Wilson should be given the largest individual credit for the proper preparation of the British Expeditionary Force for its part in the 1914 campaign and that to accomplish this task he was forced to overcome severe opposition in and out of the Army. It was during this period that he kept close contact with the Foreign Office through Sir Arthur Nicolson and was probably better informed of the European political situation than many members of the British cabinet.

Upon the outbreak of the war, he went as deputy chief of the general staff with Lord French to France and was with the Expeditionary Force during the retreat from Mons. He appeared to great advantage during this campaign; all his brother officers testify he was the strong man of the staff and Lord Esher writes "when the climax of disaster came, authority seemed naturally to slip into his hands." Also Sir Neil Macready, another general staff officer, tells of Wilson "keeping up the spirit of the staff when some of them had forgotten the necessity of appearing cheerful under all circumstances." During this time, he was extremely valuable in

reconciling Joffre and French and acquainting them with each other. He acted as chief of staff during Murray's (chief of staff) absence in England and during the heavy fighting in Flanders in October and November, 1914, he was frequently with Foch who commanded the French Army next the British. At this time the British and French troops were so intermingled that no order could be issued to the troops of either army without the approval of the commanding officers of both armies. He pays deserved tribute to the German Army in his diary, thus: "October 26. But this German Army is a superb fighting machine." He was also outspoken in praise of the French: "I get daily, a greater admiration for the French soldier. He is a marvel." Sir Arthur Murray, French's chief of staff, was obviously breaking down physically. Wilson was French's choice for chief of staff but both Asquith and Kitchener were opposed and in January, 1915, French appointed Sir W. Robertson instead. This was a bitter disappointment to Wilson and he never forgave Asquith and appeared to retain some resentment against Robertson.

On January 26, 1915, he was made liaison officer between the British and French armies with temporary rank of lieutenant general. He performed such valuable service here in maintaining harmonious relations between Joffre and French that he was probably more useful to the Entente than he would have been as chief of staff for General French. He had great difficulty in removing the distrust which developed between the British and French Armies during the battles of May, 1915.

The Battle of Festubert by the British in the spring of 1915 was a complete failure; the attack on the Dardanelles was held up; there were rumors of an invasion by the Germans; the shortage of ammunition was exposed by the London *Times* and Parliament was in an ugly mood. There was much happening in political circles in London and much agitation for the formation of a coalition cabinet. Wilson was thoroughly informed of all the details through his many friends in London. In fact, he was not without influence in the decision to form a coalition cabinet which brought many of his strong Unionist friends into power.

Towards the end of April, 1915, in a long discussion with Kitchener, who advocated a defensive attitude in France and an offensive in the Near East, Wilson pointed out the impossibility of this program unless France and Russia agreed. Joffre had previously indicated to Wilson that if the Allies assumed the offensive in the Near East and remained on the defensive in France, Germany would first beat Russia and then return in force to attack France. An important consequence of this conference was that some of Kitchener's prejudice against Wilson disappeared and thereafter they worked in closer harmony.

Some of the entries in his diary will dim Wilson's claim to be a great soldier. Thus he records a brilliant plan for pulling divisions out of France in the winter of 1917 and 1918 to send them to Palestine to knock Turkey out of the war and to return them to France in time to defeat the Germans in the spring of 1918. This suggestion was made when the intelligence department of the British Army was accurately predicting the German attack in 1918 and when the British War Office was not able to get the replacements necessary to keep Haig's army up to strength. Wilson knew little of the Turkish Army but he knew that they had successfully resisted the British advance and that there would be little fight left in the divisions after they had defeated the Turks. Curiously enough, he had pointed out this very danger to Kitchener in 1915 when Kitchener had suggested moving British soldiers from France to capture Gallipoli and then returning them to the trenches in France.

He also thought that the Germans should attack the Italians in 1918. He forced Haig to take over more of the line in France than Haig considered safe. He permitted Lloyd George to retain reserves in England and to send divisions to Palestine when every soldier was needed in France. He endeavored to make Haig turn over four divisions to Foch for a general reserve and only desisted when Haig threatened to resign. Then when the Germans broke through Gough's army in France (not attacking the Italians as Wilson had predicted) and the British line collapsed as Robertson and Haig had predicted, he complained in his diary that Haig had not taken the necessary precautions to prevent the fiasco that he had predicted, whereupon he recommended

to Lloyd George that Haig be relieved of his command. Lloyd George with a clearer vision of the reaction of British public opinion to such action would not permit Haig's removal.

Also when Foch refused to consider the possibility of the Germans breaking through in 1918 and decided to risk the war on a stand near Amiens, Wilson prepared a different opinion which would have served to justify his judgment in case Foch was wrong. When Foch proved to be correct, Wilson was slow to realize the change in the situation and as late as October, 1918, he did not realize the Germans were beaten.

American readers will look in vain for any reference to the effect of the American Army's advance through the Meuse-Argonne on the retreat of the Germans in front of the British Army. Naturally, Wilson's book is primarily devoted to the actions of the British Army; still the author notes the American effort in some of his entries and yet does not mention the decisive effect of the advance of the American Army in the Argonne on the general situation in France. Yet as a military expert, he must have realized that the American attack in the Argonne by attracting the German reserve divisions to their front made Haig's advance possible.

In 1917 and 1918, the times were tense; the French and English people were trying to reconcile cabinet government with military operations; both were dominated in turn by party cliques; both were very weary of the war; both were extremely critical of their leaders, military and civil; there were defeatists in England as well as in France, some of whom were in very prominent places. To Wilson's credit, it must be said that during this season of despair he never contemplated defeat and when even Lloyd George wavered, Wilson sustained his courage.

These times demanded a dexterous, cheerful, competent, and bold character and Wilson more than any other British officer possessed these qualities. On the whole, he served Lloyd George and his country well. It was no time to be fastidious or over-principled about the means. Lloyd George and Wilson were singularly alike in suppleness and adroitness, and it will always be to their credit that side by side they carried Great Britain through those trying days in the winter of 1917 and the spring of 1918 when the faint-hearted cried for peace at any price, and even the brave whispered in secret of a negotiated peace.

In 1919, 1920, and 1921, Wilson vainly endeavored to get the British cabinet to reduce its commitments in various parts of the world as he plainly saw there were not British soldiers enough to support its policies. Thus Britain in addition to her army in Germany was attempting to secure India, Persia, Egypt, Mesopotamia, Palestine, the Dardanelles, Batum, to provide battalions for plebiscites in Silesia, and to assist Poland. This part of his diary is extraordinarily interesting and gives a remarkable picture of the remaking of Europe after the war.

Wilson's influence with Lloyd George was obviously waning and as the troubles in Ireland increased, he was bound to draw further away from the entire cabinet which was seeking a solution of the very difficult Irish problem. Any peaceful solution of this vexatious question involved compromises that appeared to Wilson to traitorously abandon loyal Ulster to the Sinn Feiners. He grew more open in his opposition to Lloyd George, and in 1922 he was succeeded as chief of the Imperial General Staff by Lord Cavan.

He was promptly elected to Parliament from an Ulster district and defended the conduct of his constituents in the Commons and advised Craig, the Ulster Premier, on means of defending North Ireland. He boldly challenged the government's policy of "making peace with murderers," and when his friends cautioned him that he too might be assassinated he stated he would rather be murdered than to shake hands with murderers.

On June 22, 1922, while returning to his house in London, he was suddenly fired upon by two Irishmen who were apparently awaiting his return; drawing his sword he attempted to attack his assailants but fell mortally wounded. He is buried in St. Paul's between Lord Roberts and Lord Wolseley, two of his distinguished predecessors.

Solomon himself could not have composed Europe in these post-war years, much of the jealousy and strife was inevitable, and Wilson is too severe in his criticism of the statesmen. The real break came in 1922 when the two great western allies, France and England, disagreed on various questions,

which caused France to make a separate treaty with the Turkish Nationalists. The collapse of the Greek offensive in Turkey quickly followed and forced the withdrawal of British forces from Turkey. Lloyd George's cabinet had lasted longer than any other European government, but it could not endure this loss of prestige and shortly after he resigned the premiership he had held under such trying circumstances. Thus his government did not long survive the death of his brilliant and impetuous chief of the Imperial General Staff, Sir Henry Wilson.

A diary often makes the diarist testify against himself, but when it is published by his family and edited by a sympathetic brother officer, the witness voluntarily offers the evidence and cannot object if it tends to incriminate himself in the minds of careful readers.

Although a valuable and useful officer to his country, Wilson appears, from his own diary, to have been an ambitious, and sometimes not over-scrupulous character, who, throughout his life, developed his natural capacity for making influential friends. In his early career, he used his influence to spend most of his professional life in staff appointments, usually in England. His career enabled him to understand continental Europe and its armies better than most of his comrades, many of whom were in distant lands carrying on England's small wars, and prepared him admirably for the part he played in the World War.

He shifted his position on two important questions at times when such shifts benefited him personally; thus, though at first opposed to the civil authorities making any military decision against the advice of their military adviser, and though opposed to the employment of the British Army on any of the minor fronts, he joined Lloyd George to overthrow Robertson when the latter refused to detach troops from France to Palestine. As a result of this change of front, he endeared himself to Lloyd George and was later given Robertson's place as imperial chief of staff. In this transaction, and in his knowledge of statecraft, he is more suggestive of Marlborough than Wellington.

In the beginning of the war, when he was assistant chief of staff for French, he was opposed to "Unity of Command." When he was out of employment in 1917, he prepared for Lloyd George's use a memorandum on a "High War Committee" and had himself made the British military representative on the committee with power to commit the British War Office. In short, he proposed a system of inter-Allied command which made him superior to the chief of the Imperial General Staff. This system was adopted and developed into the Supreme War Council. After he became chief of the Imperial General Staff, he effectively controlled the British representative on the War Council. Even a friendly biographer has trouble explaining these actions.

The author of this book, Major General C. E. Callwell, succeeded Wilson on the general staff in London when the latter went to France as deputy chief of staff. He is familiar with all the British operations during the war. He was personally acquainted with most of the important actors, civilian and military, and there is no one more admirably prepared to write an accurate account of the life of Wilson. He wisely allows Wilson's own words to tell the story and to reveal Wilson to the reader. In places, his failure to supply dates makes it a little difficult to follow the text chronologically, but in the main, General Callwell has done the military student another service in preparing this book.

The book itself will be of lasting interest for it records almost completely the reactions of one of the most brilliant minds in the British Army to the kaleidoscopic events of the World War; it describes the relations which existed between the high command of the British Army and the British cabinet during this period; it portrays the relationship between the British and French officers, military and civil; it indicates that often there existed more sympathy and understanding between British and French military officials than between British or French military and civil authorities, demonstrating that professional sometimes transcended national sympathy; and it emphasizes the difficulties of making war under representative forms of government and repeatedly demonstrates that factional political struggles over domestic questions will not stop at the water's edge as the optimists and phrase makers so commonly assume.

W. D. P.

IN THE DAYS OF THE TAIPINGS.—By H. B. Morse. The Essex Institute, Salem, Mass. $5.00

REVIEWED BY CAPTAIN H. E. KIMMEL, U. S. NAVY

A romance of China in the middle of the nineteenth century.

The story affords an intimate view of the private family life of a Chinese gentleman; it outlines his education and indicates the opportunities and limitations of his life. The influence on his life and the development of his character due to close friendships with an Englishman and an American are clearly, if not too convincingly, stated.

The history of the family whose fortunes we follow, embraces in a charming and entertaining style an account of the foundation of the family fortune, its development, and the steps taken to maintain and increase the wealth and influence of the family.

The standards of the office-holding class are shown to be so entirely different from our conception of the duties and responsibilities of public servants, as to shed much light upon the fundamental difference between the Chinese idea of government and that of western nations.

The author tells the story of the Taiping rebellion and the part played by Ward, an American adventurer, who possessed qualities of leadership combined with love of action, which enabled him to organize and train a Chinese force which was superior in morale and effectiveness to anything brought against it.

After Ward's death, Gordon, an English officer (afterwards known as Chinese Gordon) loaned for the purpose, took over Ward's command and pushed the campaign to a successful conclusion.

The remarkable account of the exploits of Ward and Gordon is essentially true to the recorded facts. It is a chapter of the active part taken by Westerners in Chinese affairs which is not generally available to the average reader, and the author has accomplished a real service to those who are interested in Chinese history.

The author portrays the Chinese character accurately and sympathetically, though he by no means glosses over the inherent callousness and cruelty of Chinese warfare.

While it is a work of fiction, the essential features are so true to fact that it is a work of real historical value.

Mr. Morse's long residence in China, his service in the Chinese customs service in which he rose to the rank of commissioner, and his other services to the Chinese government have eminently qualified him to speak with authority on Chinese character and customs.

COUNT LUCKNER, THE SEA DEVIL

By Lowell Thomas. Doubleday, Page and Company. Price $2.50.

REVIEWED BY LIEUT. HANSON W. BALDWIN, U.S.N.R.

If the late war produced any figure more romantic and interesting than that of Lawrence of Arabia, Count Felix von Luckner, Lieutenant Commander in the German Navy was that man. The exploits of Luckner, pieced together and told in the language of the *Sea Devil,* by Lowell Thomas, constitute an epic of adventure rivaling fiction's best. The author says in his prelude:

> The ex-Kaiser, the ex-Crown Prince, Hindenburg, Ludendorff, Von Tirpitz, and sundry others of our late enemies have given us their personal accounts of the part they played in the World War. But none had a tale to tell like Count Felix von Luckner. With me the story lies close as a companion piece to the story of Lawrence in Arabia and I pass it on to you in the words of the Sea Devil and, I hope, with something of the tang of the sea.

And with the tang of the sea, he tells this incredible tale of the "used to be days" of war time when anything was possible.

Luckner, as an officer aboard the *Kron Prinz,* participated in the Battle of Jutland but it was not in this battle that his fame was gained. The exploits of the *Emden,* the *Moewe,* and the *Wolf* encouraged the German naval authorities to such an extent that it was decided, late in 1916, to attempt the despatch of another raider. But so tight had the British cordon of the blockade become that it was deemed almost impossible for the ordinary cruiser, or auxiliary cruiser, to slip through undetected, Germany at that time possessed no coaling station anywhere in the world except in home waters, so that a sailing vessel was thought better suited than steam for the exploit. A staunch American clipper ship, the *Pride of Balmaha,* was seized in a German port and converted into an auxiliary cruiser, armed with one small gun and manned by officers and men of the regular German Navy. Von Luckner was placed

in command, because, as he explained it, he was the only officer in the Navy who had had previous experience with sail. The ship was fitted with a motor and large supplies of bombs, machine guns, rifles, and explosives were carried. Subterfuge and disguise as a neutral merchantman were used in slipping through the blockade and thereafter whenever necessary.

On December 23, 1916, the *Pride of Balmaha,* re-christened *Irma* for blockade-running purposes, and disguised as a Norwegian merchantman, slipped out into the North Sea and commenced to run the gauntlet in the height of a hurricane. The storm subsided—the *Irma* fell in with a British cruiser, the *Avenger,* but passed inspection due to her excellent disguise. Once past the dreaded cordon the ship, now free, set sail for the South Atlantic and her amazing career of destruction. The names *Pride of Balmaha* and *Irma* were forgotten and the ship was renamed the *Seeadler* (Sea Eagle) and commanded by the Sea Devil proceeded to justify its name.

The *Seeadler* maintained a destructive career for months, ranging the South Atlantic and Pacific, dodging cruisers and sinking merchant vessels. She scuttled $25,000,000 worth of shipping, and wrought incalculable damage by delaying hundreds of cargo vessels from venturing out of port, and raising the rates of marine insurance. After a cruise as full of excitement and thrills as the voyages of Captain Kidd and Sir Francis Drake, the Count's raider was wrecked on the coral reefs of a South Sea Isle.

Luckner with five men sailed and rowed for 2,300 miles in an open boat across the South Pacific from Mopelia, the coral atoll where the *Seeadler* was wrecked by a tidal wave, to the Fijis. His design was the capture of some sailing vessel to replace his wrecked raider, but in the attempt he and his five men were themselves taken captive. Confined in New Zealand as a prisoner of war, the Sea Devil contrived to escape and, together with other prisoners, captured a small two-masted schooner, the *Moa.* Luckner's freedom was limited and brief, however, for after eight days he was recaptured and remained a prisoner in the "land down under" until the end of the war.

The first few chapters of the book deal with the career of the Sea Devil in his younger days, when, disguised as Phelax Leudige, he left his nobility behind him and ran away to sea to gain the experience before the mast which was to serve him so well later on in his life.

Here is a book calculated and designed to entertain, amaze, and interest the reader. It is easy reading but below the apparent careless and free style of the author there runs a continuity and grace which bind the chapters together into one cohesive, finished product. There is a suspicion that the Sea Devil is not, cannot be entirely as the author has pictured him, but the book is not intended as a biography—merely as a glimpse into a few of the extraordinary episodes in the life of this extraordinary man, Count Felix von Luckner; cabin-boy, able seaman, dishwasher, Salvation Army lieutenant, lighthouse keeper, big game hunter, champion wrestler, mate in the mercantile marine, officer in the Imperial Navy, and finally, hero of Germany.

The story is of interest not only for itself but for the message it brings; the fulfilment of the best traditions of the sea and the careful observance of the rules for the conduct of maritime warfare. Luckner seems to have lived up to the highest naval code, that of an "officer and a gentleman." His *"Aufwiedersehn"* to Lowell Thomas is one, which in these days of inferiority complexes, all Americans should take to their souls:

I want to tell you Americans how lucky you are to live in a great country . . . . with the broad Atlantic for a boundary on one side and the Pacific on the other. Yours is a great inheritance. You should make yourselves worthy of it.

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FLOYD BENNETT, MACHINIST, U. S. NAVY 1890-1928 (NAVAL AVIATOR)

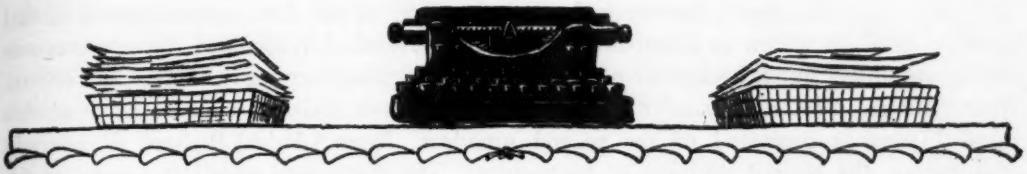
Awarded medal of honor and distinguished service medal; who lived according to the best traditions of the Navy; who died in an effort to serve others. In death he joins the nation's heroic dead in Arlington.

"He lives in fame, that died in virtue's cause."

Distinguished Naval Academy Graduates in Civil Life

CURTIS DWIGHT WILBUR, of San Francisco, Calif., Secretary of the Navy (1820 Jefferson Place), son of Dwight Lock, and Edna Maria (Lyman) Wilbur, was born at Boonesboro (now Boone), Boone County, Iowa, May 10, 1867, later moved to Jamestown, Dakota Territory, 1883; educated in public schools of Boonesboro and Jamestown; graduated from the United States Naval Academy in 1888 and resigned from the Navy in the same year; moved to Riverside, Calif., and later to Los Angeles, Calif., taught school and at the same time studied law; admitted to the practice of law in California in October, 1890; private practice until 1899; chief deputy district attorney for Los Angeles County, 1899–1903; elected judge of the superior court of the same county in 1903 and twice reelected and served until 1918, when he was appointed associate justice in the Supreme Court of California; he was elected as associate justice in November, 1918, for a 12-year term and in 1922 was elected chief justice; organized the juvenile court of Los Angeles and drafted several juvenile court laws of California; State chairman of the Near East Relief; trustee of the Hollenbeck Trust of Los Angeles; married Olive Doolittle, of St. Paul, Minn., on January 13, 1898; Congregationalist; at time of resignation to accept portfolio of Secretary of the Navy was chief justice of the supreme court of California.

SECRETARY'S NOTES



Annual Dividends

Each year, in June, the two service academies, Annapolis and West Point, send forth several hundred graduates to take up their careers of service to their country. These graduates represent the dividends of the money invested in these two schools by the people of the country. No especial part of the country is favored in the output, as the undergraduate body comes from every state in the Union, in proportion to their respective populations. And they come from every walk of life.

West Point and Annapolis have an international as well as a national reputation for their outputs, a reputation which has been established upon the accomplishments of their graduates in military, naval and civil affairs.

Men who have been educated in schools which require a rigid application to studies, which develop the physical as well as the mental side of the individual, and which demand a high moral standard, are bound to be useful to their country. Their worth cannot be evaluated in terms of money.

When all is said and done, what more can one offer than one's life in the service of the country?

Read 'em and Weep

Recently, 107 people were arrested in Washington for parading on the White House grounds in the interest of the *All-America* Anti-Imperialistic League. The list of those arrested reads like a telephone directory of Leningrad. Why they should be in the country, let alone being allowed to parade the streets, is a question. Yet some of our pacifist organizations attach importance to their activities! They prefer these for bedfellows to those whose lives are devoted to the service of their country. Well, the feeling is mutual.

The Distinguished Graduate for June

The Honorable Curtis D. Wilbur, graduate of the Naval Academy, Class of 1888, distinguished jurist and member of the cabinet of President Coolidge. By a strange coincidence, Secretary Wilbur renews his association with the Navy at the time his classmates are in positions of high command. This fortunate circumstance is viewed with alarm by that type of person who insists that a Secretary of the Navy should know nothing about the Navy.

Officers, Attention!

A very interesting and useful article on "Standardizing Terms, Procedure and Records in Navigation," by Commander A. M. R. Allen, U. S. Navy, will appear in the issue coming out July 1. It will be especially valuable to those persons coming up for promotion.

The Fleet in Puget Sound 1908

While at San Francisco, Rear Admiral Evans was relieved of the command at his own request. Ill health had forced him to request detachment. Rear Admiral Charles M. Thomas succeeded in command, but for only a few days, as he was about to retire. On May 15, Rear Admiral Charles S. Sperry took over command of the fleet and continued in that capacity until its return to Hampton Roads. Rear Admiral William H. Emory was second in command until the arrival of the fleet in the Mediterranean, when he retired. Rear Admiral Seaton Schroeder commanded the fourth division until he relieved Admiral Emory in command of the second squadron. Rear Admiral Richard Wainwright commanded the second division of battleships. The destroyers were left behind on the West Coast. The *Ohio* replaced the *Maine,* on account of the *Maine's* heavy coal consumption, while the *Wisconsin* replaced the *Alabama,* which had a cracked cylinder. The *Maine* and *Alabama* proceeded home in advance of the fleet, via the Suez.

After a most delightful stay in San Francisco, the fleet left for Puget Sound ports. No one will ever forget the beautiful scenery of the Sound, the snow-capped mountain peaks on all sides, Mount Baker and Mount Rainier. Some of us were fortunate in getting an opportunity to spend a few days in the foothills of the Olympics and along Hood's Canal, a freak of nature. Portions of the fleet visited Bellingham, Port Townsend, Port Angeles, and other ports. Then the whole fleet steamed into Seattle, where we got bears! Each ship was presented with a cub for a mascot. Some of them eventually found their ways into zoos on the East Coast, on the return of the fleet, but those bears certainly raised Cain for the rest of the cruise!

Seattle opened its doors to the fleet and we had a royal time. Then away to the navy yards to get ready for the long trip back, via the Suez Canal.

With the Aviators

With the coming of spring, activities in the air have started with a bang. An Italian aviator flies at 318 miles an hour, American aviators keep the air for fifty-three hours, German and Irish aviators cross the Atlantic from east to west, an Austrian flies across the Polar regions from Pt. Barrow to Spitzbergen, and German aviators demonstrate the feasibility of a plane towing a glider, with the prediction that the future will see *trains* of airplanes! The British are working on a plane that will climb almost vertically while France stops work on her transoceanic planes long enough to welcome home their round-the-world fliers. The whole world is becoming air-minded.

The Tragedy of the "Royal Oak"

Last month the PROCEEDINGS published an article on "The Tragedy of Admiral Byng." Another tragedy has occurred in the British Navy, the *Royal Oak* affair. To some it may not appear a tragedy, but when three officers, of high rank, with distinguished service in war to their credit, are removed from their commands and either retired or placed on inactive duty—that *is* tragedy. The accomplishments of a lifetime thrown into the discard with nothing to show for them!

The board found the incident "trivial," and such as should have been easily settled "had there not been an unaccountable failure among the three officers of high rank to show the good temper and common sense normally found among all ranks and ratings."

There is a lesson in this unfortunate affair for all in the military professions, for the *methods* of discipline are similar. Rules, regulations and customs are the results of

years of experience in handling military matters. When one violates any of them, he is flying in the face of experience and is very apt to be wrong.

The admiral had recognized ways of expressing his disapproval; the captain had orderly processes of obtaining redress for wrongs; the executive had regular channels for forwarding complaints, but all three of them seem to have departed from time-honored regulations and customs with dire results.

"Good temper and common sense" and a knowledge of the customs of the service, with these a good many matters can be ironed out.

Figures Don't Lie

Thanks to the adding machines, the list of lives lost in the World War has at last been tabulated. Thirty-seven million according to the latest figures!

Ten million lost at the front, six millions behind the lines due to privations, ten million Russians below the normal birth rate (Who wants to be born in Russia, anyway?), deaths from famine, pestilence and plague. It is not known whether deaths from automobile accidents were included or not. The tabulators failed to take into consideration the thousands of children left unborn by those mothers who were singing, "I did not raise my boy to be a soldier."

But why bring that up?

Our Colored Frontispieces

We have tried in previous issues to tell our readers about the framed frontispieces which the Institute has for sale, namely, the five "Ages." One of our members, who bought a set, expresses the idea better than we could hope to do, so we are quoting part of his letter which reads as follows:

"Today I received the five colored frontispieces which I ordered April 2 and to say that I am more than pleased with my purchase is putting it mildly, for they are about as fine a group of pictures as I have ever seen. The framing is also done in excellent taste; last but by no means least, the thought of enclosing picture wire, eye screws and providing holes was doubly appreciated."

There you are. Fine for cabins, wardrooms, steerages, yachts, or the home.

The American Navy in the World War

Last month we presented a picture of Burnell Poole's painting, "The Sixth Battle Squadron at the Firth of Forth," which was unveiled at the Naval Academy on April 6 last. The following is the address of Commander A. Felix du Pont, U.S.N.R., on the occasion of the presentation.

Admiral Rodgers, Admiral Nulton, gentlemen of the Navy and guests:

How and why this picture, depicting one of the historic events of the late war, came to be painted by Lieutenant Commander Burnell Poole, U.S.N.R., is a story which is well worth telling in a brief way on this occasion.

Mr. Poole had obtained at his own request a commission as correspondent attached to our overseas fleet with the rank of lieutenant commander. His purpose was to make sketches, photographs, and to undergo experiences, all of which would qualify him to memorialize on canvas for all time the part that our Navy took in that great struggle.

Upon Commander Poole's return, he experienced a bitter disappointment when he discovered that the anticipated interest was not forthcoming from the quarter whence the necessary financing was expected, and after strenuous efforts to obtain recognition, he abandoned his project.

This matter came to the attention of Irenee du Pont about a year ago when Mr. Seward Prosser, chairman of the Bankers' Trust Company of New York, showed him a painting of the

destroyer *O'Brien* made for Mr. Junius Morgan, who was her commander during the war. It was brought out in the course of the conversation that Commander Poole had a tremendous amount of material on which to base a series of pictorial records of the U. S. Navy that would be lost to posterity unless some means were found of having the original work as contemplated brought into existence.

The artist, for many years, has been closely identified with the painting of naval scenes and his ability has been recognized in the results. One of his canvases hangs in the British Admiralty, London, and others have places in important private collections. In addition to the painting in the Morgan collection in this country, he is represented in the Arthur Curtis James and the Gates McGrath collections, and one of his paintings hangs on the walls of the Harvard Club in New York.

Mr. Irenee du Pont was very much impressed and upon his return to Wilmington promptly conferred with the present speaker as to the possibility of completing the work started by Commander Poole. As a result, it was decided that the du Pont Company would engage Commander Poole to paint this series of pictures and present them where they would be an appropriate historical exhibit to remain as a record and inspiration to present and future generations of naval men.

This short account would not be complete if I did not say something about the relations between the du Pont Company and the Navy. The two institutions have grown together for the past 126 years and by reason of that, many life-long friendships have been made. The relations between the two organizations have a far greater significance than those of mere commercial dealings. These considerations influenced our Executive Committee in their acceptance of the recommendation that the work be undertaken and the speaker, as head of the Smokeless Powder Department, was chosen to make the formal presentation.

This picture, which is the cause of the present gathering, is the first of a series which is to be presented to the Naval Historical Foundation and be loaned by that organization to the U. S. Naval Academy as a permanent exhibit. Judging from comments already made on this painting, the whole series, when completed, should prove to be one of the most truthful, and at the same time the most artistically carried out collections, in existence. We are most happy in the discovery of our friend, Commander Poole, with his fund of facts wherewith to carry on this work.

I deem it a great privilege to present this series of pictures, in the name of the du Pont Company, to the Naval Historical Foundation.

What Have You Done?

Since the first of the year, the members and associate members have been increasing at the rate of over a hundred a month. Some of our members are very active in nominating their friends. We get numerous letters complimenting us on the PROCEEDINGS (and some are not so complimentary!); they are worth the money to anyone interested in naval subjects.

The PROCEEDINGS will be better if our membership increases enough so that we can go out and get what we want.

If each member and associate member got an extra member, our circulation would be doubled! (The editor is getting as bad as the rest when it comes to figures.) It has to be doubled if we want to keep up our present standard. It *will* double, but let's do it now. Have you sent a subscription to your home town library? Cut out one of the little slips you will find in the PROCEEDINGS and send it in.

Pirate, Patriot or Adventurer?

The Lafittes, of "War of 1812" fame, have as startling a reputation as one could wish. Accused by some of being nothing but pirates; accepted by others as simply slave-runners (corresponding to rum-runners of today); known to have commanded General Jackson's naval artillery at New Orleans; their origin unknown; the time and place of their deaths unrecorded; what more could one want for a romance? In fact, "Black Ivory" is based on part of their history.

But eventually, when they ran afoul of the Federal government and the Navy, they and their kind were run out of the Caribbean and the Gulf.

"A Visit to Lafitte," contributed to this issue of the PROCEEDINGS by Rear Admiral Elliot Snow (C.C.), U.S.N., is an authentic narrative of stirring adventure, witnessed by a naval officer and was first published in the *Knickerbocker* magazine for March, 1847. The editorial comment in that periodical ran thus:

> We cannot permit this narrative, of an eye witness, to pass to our readers without remarking that to such men as the brave officer who had command of the boats on the occasion referred to, that the United States Navy is indebted for its high renown throughout the world.

A search of the files of the Navy Department made for the contributor, under the direction of the Superintendent of War Records and Library of the Navy Department, fairly definitely places the authorship of the narrative on First Lieutenant James McIntosh, U.S.N., as the following letter, addressed to General James Long, was unearthed.[1]

> November 10, ????
>
> Sir: It is with pleasure I have to inform you, by the request of Mr. Lafitte, Commander of the forces at this place, that on the 8th instant I was despatched with the communication to him from Lieut. Commandant J. R. Madison of the U. S. Navy, the commander of the U. S. Schooner *Lynx*, having been blown off by boisterous and disagreeable weather—that the treatment *I have received from him* (italics supplied) has been the most friendly, generous and hospitable, and every possible means extended in making the situation of myself and crew agreeable and comfortable—and every assistance given in securing the prisoners which have been delivered to me during my stay.
>
> J. M. MCINTOSH

To which one of the two Lafitte brothers, Jean or Pierre, this narrative refers is not disclosed. Concerning them, the Louisiana wrote:

"There is quite an amount of interesting data, much legendary, concerning the brothers Jean and Pierre Lafitte, who were most interesting characters in Southern Louisiana about the time of the transfer of Louisiana to the United States."

In the "Visit to Lafitte" will be found a bit of history of one of the Lafittes which is not legendary, and the record, long since forgotten, of a very interesting bit of "landing work" upon the part of the Navy.

A VISIT TO LAFITTE

(From the *Knickerbocker Magazine*, March, 1847)

In the winter of 1819, when the late Commodore Patterson commanded the United States' naval forces in the Gulf of Mexico and on the coast of Louisiana, the United States' schooner Lynx, then commanded by the gallant and lamented Lieutenant J. H. Madison, was ordered to cruise between the mouths of the Mississippi river and the harbor of Galveston, at which place LAFITTE had a force of some three hundred and fifty men. The prizes captured from the Spaniards by the privateers of Lafitte were taken to Galveston, and in lieu of money the crews were paid off with certain portions of the cargo, which ultimately were irregularly introduced into the United States, in boats through our western rivers, the Sabine, Memento and Calcasiu. It was to prevent this illicit trade, and to protect our citizens on that coast, that decided the Commodore to give the Lynx that destination.

On arriving off the Memento river the schooner was brought to anchor, there not being sufficient water on the bar for her to enter. Boats were despatched immediately, under charge of her First Lieutenant (the present Commander J. M. MCINTOSH,) who, very soon after getting into the river, overhauled a fishing-boat, from a settlement some distance up the river, and learned from the crew that two armed boats, with some eight or ten men in each, had left the previous night for the Sabine; that these boats belonged to Galveston, and that the men pretended to be cruising under authority from Lafitte. They had ascended the rivers Memento and Calcasiu, and in many instances had robbed the citizens and horribly abused the females. Lieutenant McIntosh also ascertained that

[1] Niles Register Vol. 17, p. 396.

a small privateer, cruising under the orders of Lafitte, had captured on the Campeachy bank a Spanish schooner, and had succeeded in getting the privateer and schooner over the bar of the Calcasiu river, had ascended it some hundred miles, and were still trading with the inhabitants, who were few and widely scattered apart; and that apprehension was felt that after disposing of their goods they might maltreat them. It was soon discovered that one of the crew of the fishing-boat was more intelligent that the rest, and a pilot, for they seldom visited rivers except for the purposes already alluded to; there was therefore little time lost in making an agreement with him and taking him to the Lynx. The information was no sooner communicated to the active and vigilant commander of the schooner than the hoarse voice of the boatswain was heard: 'All hands up anchor, ahoy!' It was soon secured, and all sail set for the Sabine, Lieutenant Madison wishing first to get possession of the armed boats. The shoal water at the mouth of the Sabine runs off a long distance, and the schooner had again to be anchored and the boats despatched; now, under charge of the sailing-master, Mr. King, and a midshipman. The boats of the Lynx were necessarily small, for she was about one hundred tons burthen, and it was advisable not to overload them with men, lest it should impede them in pulling, as the boats they were after were described as being very fast.

Just before night Mr. King left with his two boats and ten men, with instructions to guard the mouth of the river closely during the night, so as to prevent the boats escaping, and at day-light to ascend the river until he found them. He had not however proceeded far before they were in sight, and the chase commenced. For two hours the boats from Galveston held their own, but after that our boats gained rapidly, and the chase soon terminated by the piratical boats running ashore, and the men jumping out and concealing themselves in the immense cane-swamps which arise on the sides of this stream near its mouth. Mr. King, finding it impossible to get the men, and aware of the anxiety of his commander to proceed at the earliest moment to the Calcasiu River, in hopes of securing the privateer, took his two prizes (both fine boats) in tow, and before the sun had left us for the day, he was on board. The captured boats could not be hoisted in, but were soon dropped astern; and again the little Lynx spread her canvas, looking northerly for the Calcasiu. The distance between the mouths of these rivers, the reader must recollect, is not great; and as the morning broke, the pilot pointed out the mouth of the river; and when abreast of it, and as near as safety would permit the schooner to be carried, she was anchored, and preparations were commenced to ascend the river. Lieutenant McIntosh was ordered to take command of the expedition, and Purser Fanning, since dead, volunteered to command one of the boats. The two prize-boats were selected, from their size and for being equally fast with those of the Lynx. One week's provisions for twelve men and their officers, a musket and a pistol for each, and good tarpaulins for keeping them dry, were provided, and the expedition started.

There was but little of interest for the first fifty or sixty miles. The land on each side of the river was low; the river itself sinuous and abrupt in its turnings, but gradually becoming fresh, with less current. About the commencement of the second night, however, and after having passed through several lakes, some of which were so large as to make it difficult to see the opposite shores, the river contracted; the land became more elevated, with a most luxuriant and large growth of forest trees. The pilot now informed Lieutenant McIntosh that it would be necessary to proceed with great caution, as he believed they were getting in the neighborhood of the search. The oars were immediately muffled, and the boats took different sides of the river, to prevent the possibility of passing the vessels. As they ascended the river it still contracted, until the limbs of the immense forest-trees touched and formed a canopy which excluded almost the sight of the stars. It had now become intensely exciting. The darkness of the water—for it becomes, after ascending a hundred miles up, almost black—the trees shutting out the heavens, and the dreadful howlings of wild beasts, apparently immediately over the boats; the screeching of that nightbird, the owl, and the bellowing of some hundreds of cattle pursued by the barking wolves, and dashing in their fury along the banks of the stream, all combined to make the scene one of wild and exciting adventure.

Just previous to the dawning of the day the loud crowing of a fowl indicated an approach to some habitation, and the pilot desired the boats might be checked. They were pulled to the middle of the stream and made fast to a sawyer to await the daylight, which soon appeared, when there was discovered a short distance above, on the right bank of the river, a log-house, enclosed with what is termed a Virginia fence. The landing-place was soon reached, and Lieutenant McIntosh and his

companion, Purser Fanning, proceeded to the house, and after some little time they succeeded in awakening the inmates.

As the door opened, a figure presented itself which it would be difficult to describe. He (for it proved to be a man) bore all the marks of having worked hard, lived hard, and being about to die hard. He was tall, but had become as gaunt a skeleton as Dr. Edson, and his countenance was of that ghastly hue which so strongly marks the subjects of that horrible disease, the fever-and-ague. After exchanging the usual salutation of 'Good morning,' he asked:

'Strangers, is you from Galveston?'

'Yes,' was the reply.

'Is you some of Lafitte's people, and has you any thing to trade?'

'Yes.'

'Well then, if you takes my advice, you'll keep a sharp look-out, for the militia is up and a'ter the captain and men of one of your vessels that's up here stowed away.'

The morning being damp with a heavy due, the officers had on pea-jackets, which concealed all traces of uniform; and Lieutenant McIntosh quickly discovered that with a little management the privateer and her prize was in his grasp. He asked if the militia had captured any of the men.

'No, they was a little bit too quick for 'em. You see, strangers, I gi'n 'em a hint that the militia was coming; the captain of militia come a'ter me, but d—d fever-and-ague had me so fast I could n't go; so I axt him what was the muss, and he told me that so soon as he could get men enough he was to take the pirates, for he called 'em all pirates.'

'Well, do you know what has become of the captain of the privateer and his crew?'

'No, I do n't; but I guess, a'ter they hid the vessels, they tried for Galveston; but I thinks they will have a scramble 'fore they catch it.'

'We would like very much to find the vessels, so that we could put our goods in them, for we have only open boats, and then we will go away until all is quiet again.'

'Well, strangers, I'll tell you; but I guess it 's worth a trifle, as no one but me knows.'

'Oh, yes; you shall have ten dollars. Is that enough?'

'Yes.'

'Well, now, where are they? Be quick, for we must get out of the way of your militia.'

'You must pull up the river for a quarter of a mile, on the left-hand side; look sharp, and you'll see a bayou; the mouth is little, but it grows bigger a'ter you 're in. You goes into this 'ere bayou, and I guess a'ter you pull 'bout say one mile and a quarter, you 'll see the privateer.'

'Can you get to the vessels by land from your house? and how far is it?'

'Oh, certain you kin; it is 'bout a mile, I guess.'

'Have you a horse?'

'Yes, he is there, back of the house.'

'Now walk down to the landing, and see our boats and our goods.'

This was soon accomplished; but when it was discovered that the boats contained no goods, the astonishment of this ignorant man may be imagined, but not easily described. Lieutenant McIntosh now called to one of his best men, directing him to get his musket and come ashore, which was promptly done. He then ordered him to take charge of the countryman, to allow him to get on his horse, but to take the bridle himself, and make him go to the vessels, and if he arrived first to remain until he came. The distance was soon pulled in the boats, and the vessels found. Their sails were unbent, running-rigging unrove and put below; and, from the cocoa about the deck of the prize-schooner, it was evident that her cargo had been taken out. All hands were soon employed in bending sails and reeving rigging; and in the mean time the man arrived, leading the horse by the bridle, and the ghostly-looking informant astride of him.

'Now, Sir,' said Lieutenant McIntosh, 'you have so far directed me correctly; tell me where the cargo has been concealed, and I will let you go back to your house. I see there has been a cargo of cocoa landed, and if I do not find it, you shall be taken to New-Orleans and be tried for dealing with pirates.'

'So help me GOD, stranger, I do n't know where the *cuckeho* be; but this I tell you, them pirates, as you call 'em, axt me for some bulls'-hides to cover up the goods; and they tell'd me when they come to take 'em away, they would pay me; so I gi'n 'em twelve. You see, if I had n't gi'n 'em they would taken 'em, any how.'

Satisfied that the cargo was somewhere in the neighborhood, Purser Fanning was directed to take

one of the boats and pull close to the shore down the bayou, and wherever he saw any thing which would indicate that a landing had been made, to examine, and if successful in finding the cargo, to fire a musket, and immediately to commence with his crew to remove it as near the water for re-shipping as practicable. The report of a musket was soon heard, and the prize-schooner being now ready, the privateer was taken in tow, and with a light breeze proceeded down about half a mile and anchored a short distance from the shore, to take again aboard the cargo discharged from her but a few days before. The informant in the mean time had been permitted to return alone to his house, with a promise never again to have any thing to do with pirates. The taking the cargo on board, consisting of bags of cocoa and Peruvian bark, was soon accomplished; the anchor was weighed and the vessels towed out of the bayou by the boats, when they commenced descending the river, and about night-fall reached the spot they had left so early in the morning. The men had had a most fatiguing time since they had left the schooner, and Lieutenant McIntosh determined to let them have a comfortable night's rest. They were therefore ordered, so soon as they had their suppers, to go below in the vessels; but they preferred the decks, swearing they had 'seen too many d—d centipedes and scorpions in the bloody crafts to venture under deck.' At day-light the next morning some of the men bent the sails and rove the rigging of the privateer, while the others were cutting a good load of wood to ballast her, and which would be very useful in the Lynx.

About mid-day, everything being prepared, sail was made down the river, and on the third day after, the expedition reached the Lynx without accident. No time was to be lost, for the captain yet hoped to get possession of the men who had been chased ashore in the Sabine. The schooner with the prizes were soon once more under way, and stretching southerly for the Memento river. On arriving there, the two prize schooners were sent in and anchored, there to remain under charge of an officer and a few men, until the return from Galveston, for which port sail was made with all despatch.

The weather had become exceedingly foggy, and the captain, supposing from the run that he must be off Galveston, hove to, in hopes that the fog would disperse. Toward meridian, a breeze sprung up which soon carried off the fog, and at the same moment revealed the harbor of Galveston and a sail-boat standing in for it. The schooner's position made it an easy matter to cut the sail-boat off; but this being discovered. she bore up and made for shoal water on the opposite side from the town of Galveston. The boats of the Lynx were soon in chase, but the boat was beached, and the men running for the woods before the schooner's boats landed; shore however was made, and one of the men captured, who, with the boats, was brought on board. The Lynx had anchored just outside Galveston bar.

The captured man was in a wretched condition. He had on no shoes, his feet were lacerated and torn with briars, and dreadfully swollen; his countenance was scarcely human, and he appeared almost unconscious of what he said or did. He was questioned by the captain, but nothing of importance could be elicited. The men were going to their dinner, and he was placed in one of the messes. In a very short time one of the men of the mess came to Lieutenant McIntosh and reported that the man he had ordered in their mess had eaten up every thing most voraciously and was craving more, and would kill himself if not stopped. The surgeon was directed to see what was the matter, and the fact communicated to the captain. The surgeon reported that, from some cause unknown to him, the man was certainly eating too much, and must be allowanced. This induced the captain to have a farther examination; and the poor creature was encouraged to relate who he was and where he came from. After a severe struggle, and with tears flowing from his eyes, he acknowledged he was one of the crew of the boats chased ashore in the Sabine; that before they left the boats they had thrown all their arms into the river, and that they had been ever since working through the forest in hopes to reach Galveston; that they had arrived on the point opposite, the night before, and made a large fire as a signal, and that Lafitte had sent the boat we had taken to bring them over; that during the time, they were so driven by hunger that they had drawn lots who should be killed to sustain the rest; that it had fallen to the lot of an Italian, who was bled to death, and then devoured! For some days the bones were carried in their pockets and sucked for nourishment; and had they not arrived on the night they did, they were again to cast lots for another victim. So soon as these facts were known, Lieutenant Com. Madison sent his First Lieutenant to Lafitte, demanding the surrender of the men to him as pirates, who had been committing depredations on the citizens of the United States. The officer was met by Lafitte at the usual place of landing with every demonstration of respect, and courteously invited to his dwelling, which was

accepted. Lieutenant McIntosh now handed to Lafitte the written demand of his commander. It was attentively read, apparently some two or three times, when Lafitte observed: 'I am most truly happy that you have succeeded in tracing those vagabonds thus far, and that you will be enabled to identify them by the capture of one of the crew. Assure your commander, Sir, that they will be all taken; they cannot now escape me; and it will afford me very sincere pleasure to deliver them over to him, to be dealt with as pirates. They have been acting under no authority from me, nor from any person connected with this government.' An officer was sent for, and directed to launch Lafitte's fast-pulling gig, and when manned, to report it. When this was done, Lafitte ordered him to proceed to the opposite side of the river, and to bring the men to him who had been chased on shore by the boats of the United States' schooner Lynx. He then turned to Lieutenant McIntosh, and said: 'It will be some time in the night before my boat will return, and as you have not more than time to get on board your vessel before dark, and as our bar is a dangerous one to those unacquainted with it, I will not detain you to answer in writing the letter of your commander, but will do so to-morrow when he sends for the men.'

Lieutenant McIntosh thanked him for his consideration and politeness; took leave, and regained the Lynx as night set in; but some considerable danger attended his progress, for a brisk breeze springing up from the South, there was a bad sea on the bar and outside of it. He had been on board but a very short time, before the wind and sea increased so much as to make it necessary to get under-weigh and 'claw off' from the land. The wind continued to increase, and before morning had risen to a perfect gale. It was a night of much anxiety, for the schooner was on the lee-shore and had to be severely pressed to gain an offing. The weather for some five or six days prevented a return to Galveston; it finally moderated, however, and on a fine afternoon she made the harbor and stood in for her former anchorage. On looking with spy-glasses, something like a gallows was seen on the low sandy point which forms the entrance to the port, with something suspended from it. This certainly was not there when the schooner left, and whether intended for a mark, or what else, could not be decided, even after she had gained her anchorage. The schooner again at anchor, Lieutenant McIntosh was once more directed to take the largest of the boats, proceed in, and bring out the men, if they had been caught.

As the boat neared the low sandy point, it was discovered that what had attracted so much attention on first making the land, was a gallows with a body suspended from it. Again the Lieutenant was received with courtesy, and was informed that the men were all ready to be given up, with the exception of the leader, who was hanging on the gallows on the point. 'Tell your commander,' said Lafitte, 'I found the principal of this gang so old an offender, and so very bad a man, that I have saved him the trouble of taking him to the United States, and hung him myself!' He now read to Lieutenant McIntosh his communication to the commander of the Lynx, who politely asked, before it was sealed, if he might see the letter of Captain Madison to Lafitte, to which this was a reply. The request was acceded to: after reading it the Lieutenant stated that he regretted, after the kindness and courtesy which he had received from Captain Lafitte, and his exertions to procure the men, to decline being the bearer of such a letter to his commander. There were expressions which he deemed discourteous, and threats which would be offensive to that officer. Lafitte quickly replied, that nothing of the kind was intended; that it might arise from his imperfect knowledge of the language; and that if Lieutenant McIntosh would be so kind as to point out the exceptionable parts, he would with pleasure erase them. This was done, the letter copied, read aloud and sealed, and Lieutenant McIntosh received it, and parted with Mr. Lafitte; not however until he had advised him by no means to attempt to cross the bar with his boat so deep as she then was with the additional men, if there was the slightest increase of wind, or if night should overtake him before he reached it.

It was getting late in the afternoon, and the weather was threatening; yet being anxious to get on board his vessel, the attempt was made; but night coming on, and finding a rough sea on the bar, it was abandoned, and the boat put about and again headed for the lights of Galveston. Lafitte had anticipated it, and had placed a look-out to report the return of the boat; and on meeting Lieutenant McIntosh, expressed his great pleasure at his return; for he said, 'Your boat would have been lost had you attempted to cross the bar with this wind. I hope you will feel perfectly at home with me; your men shall be taken good care of, and your prisoners secured until you can make another attempt to get on board.' The utmost hospitality was extended to the Lieutenant, and a free and easy conversation took place. Lafitte was asked if he did not sometimes feel him-

self embarrassed in his position, having around him men of every nation and of all varieties of character, and as it were alone in case of mutiny. He replied: 'Never in the least. I understand the management of such men perfectly, and I keep them under good control, as you have just seen, from the prompt manner in which your prisoners have again been ironed, and a sentinel placed over them, by my order. I know precisely how far to go, and I would have saved your commander all trouble in relation to these men if I had dared, for I would have hung every man of them. But I saw, Sir, that to have hung up another would have been the moment to have questioned my power. I made it appear that I considered the example sufficient, and retained my control.'

The next morning nothing could be seen of the Lynx. She had during the night been again driven to sea, and one week elapsed before she was again in sight. During this period every thing was done to make Lieutenant McIntosh's time pass most pleasantly. A fowling-piece with ammunition was at his command; the various pleasant games which are usually resorted to were introduced; and when the hour arrived for his departure, the officer felt that he had passed a pleasant week with no common man; with one who, if he had his vices had also his virtues, and who possessed a courteous and gentlemanly deportment, seldom equalled and not to be surpassed.

Change in Board of Control

Due to receipt of orders to sea duty, Captain C. E. Smith, U. S. Navy, resigned as a member of the Board of Control. Captain John N. Ferguson, U. S. Navy, has been appointed to succeed Captain Smith.

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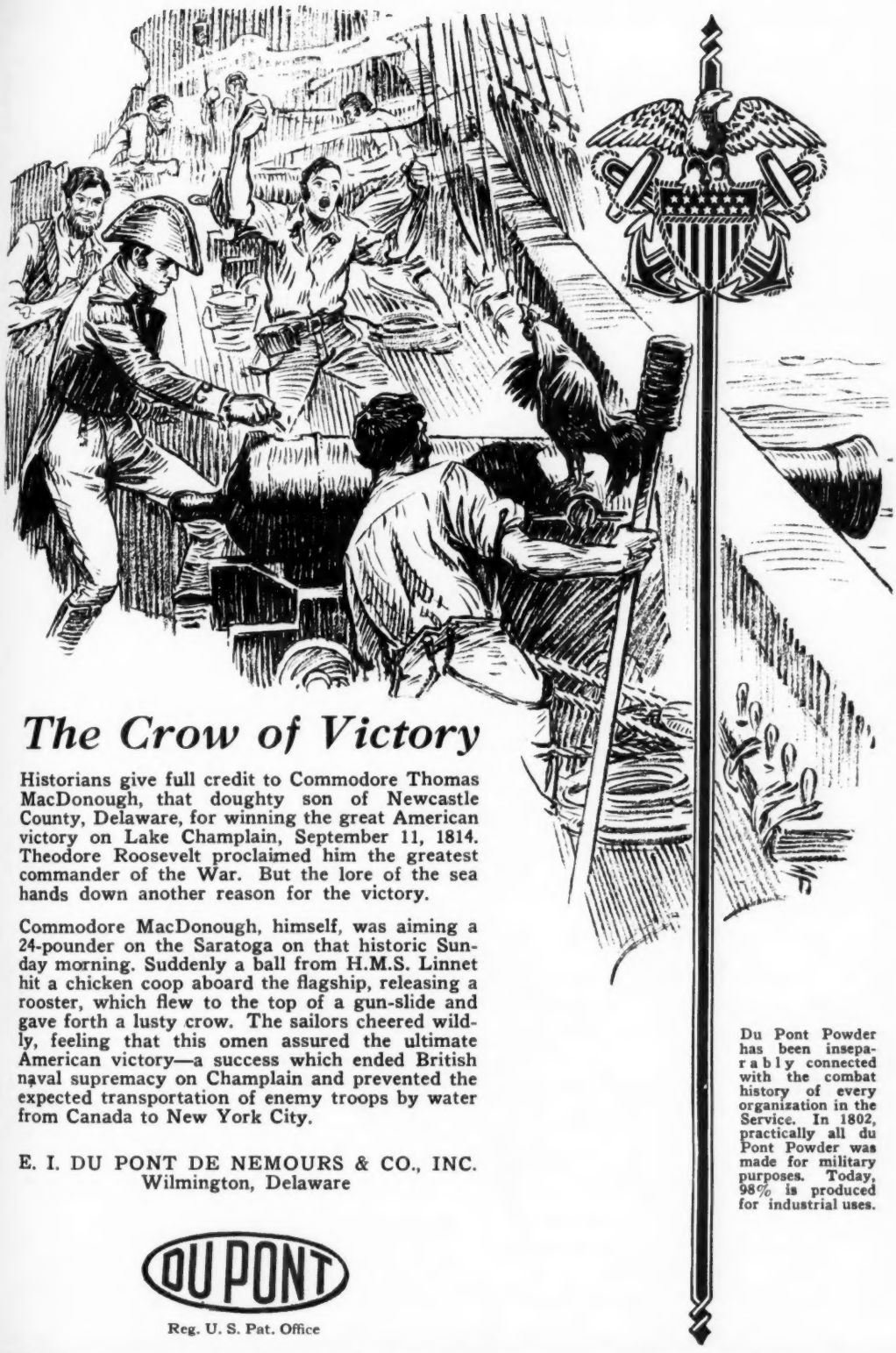

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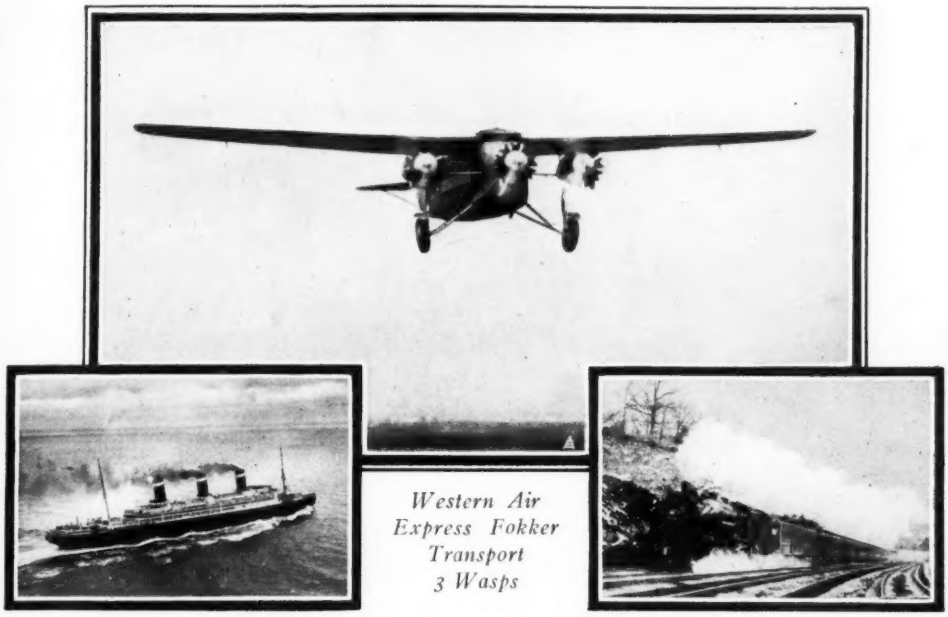

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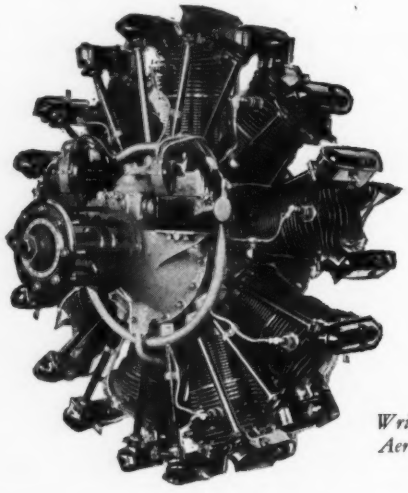

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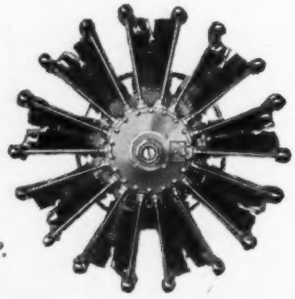

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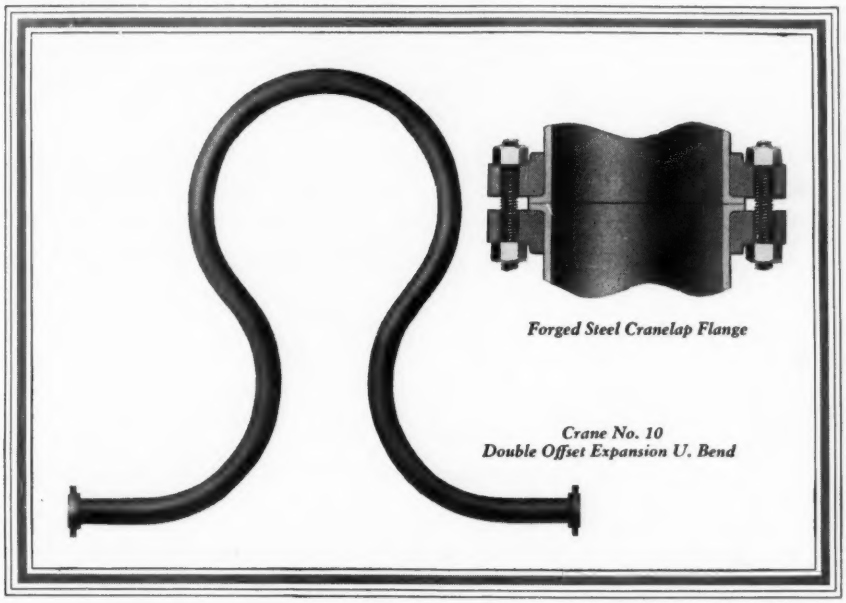

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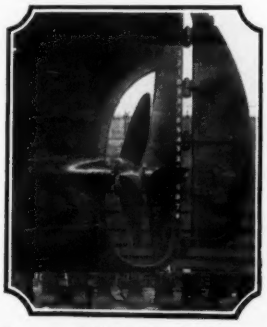

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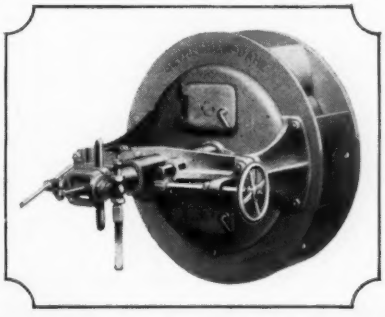

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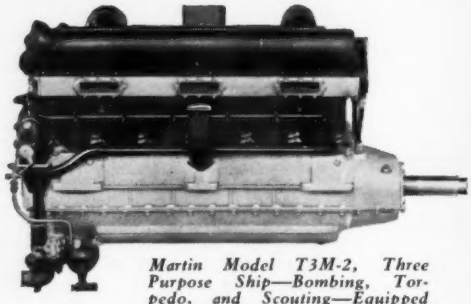

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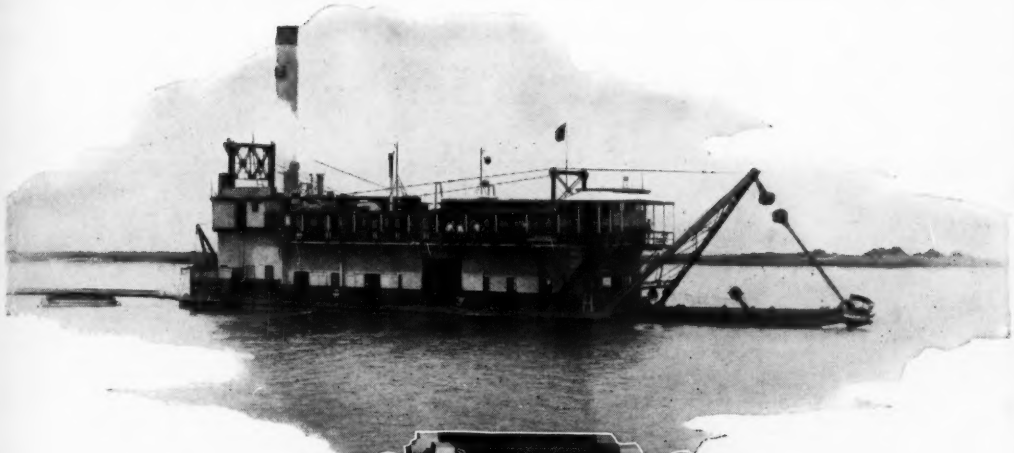

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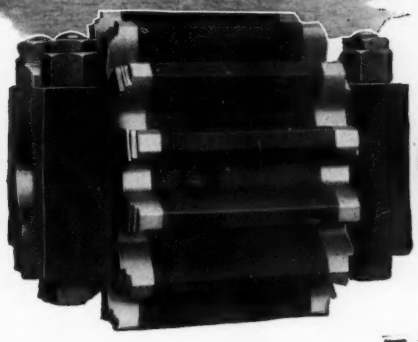

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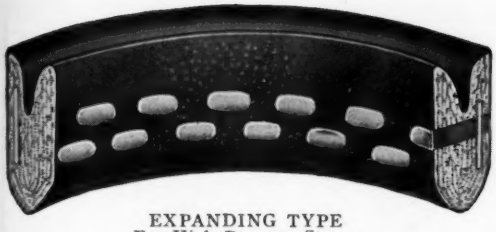

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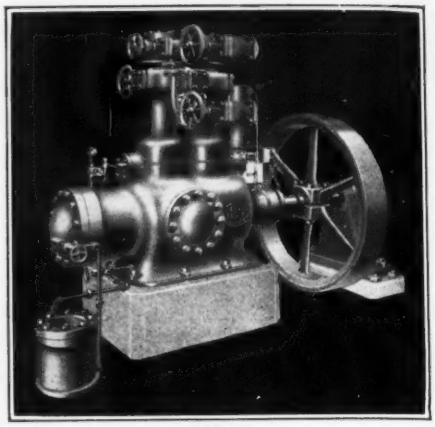

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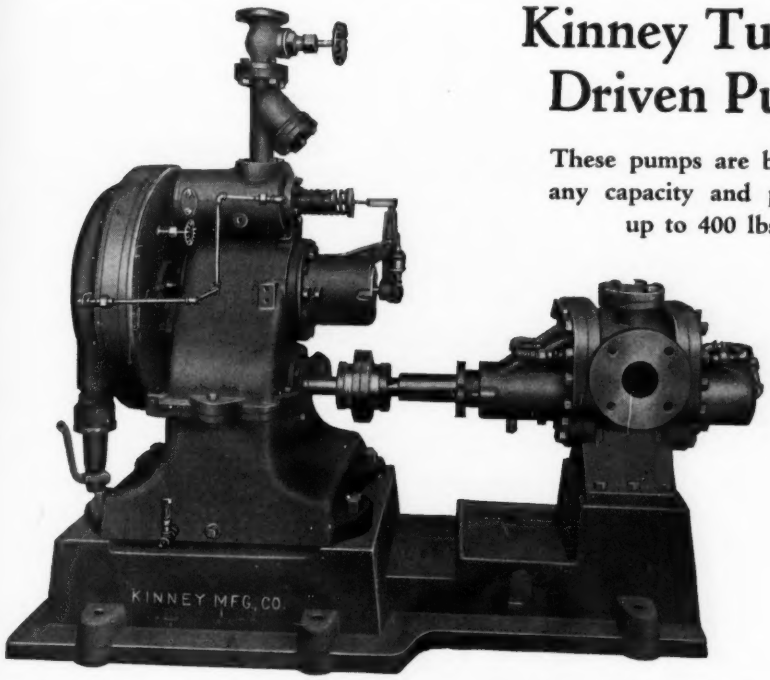

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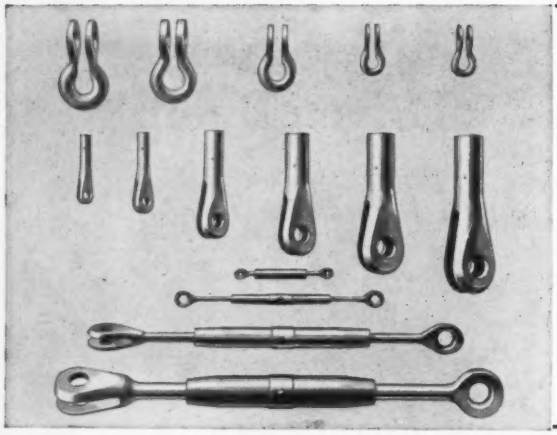

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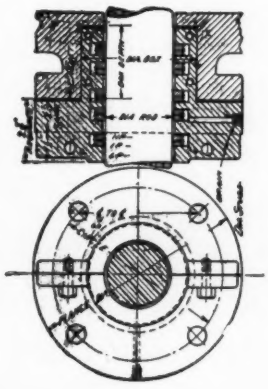

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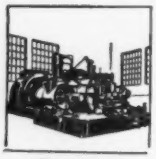

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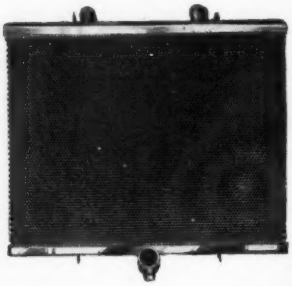

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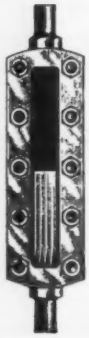

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